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THE SPHERE

Vol. CLXX No. 2219 WITH WHICH IS INCORPORATED THE GRAPHIC AUGUST 1 1942

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Volume CLXX No. 2219 The SPHERE, London, August 1, 1942

THE SPHERE
With which is incorporated "THE GRAPHIC"
The Empire's Illustrated Weekly

GENERAL FREYBERG, V.C., AFTER HE HAD BEEN WOUNDED IN THE FIGHTING AT MERSA MATRUH. THE GENERAL IS LYING IN A SLIT-TRENCH AFTER THE ENEMY HAD BEGUN TO SHELL THE FIELD DRESSING-STATION TO WHICH HE HAD BEEN CONVEYED

Lieut.-General Sir Bernard Freyberg, V.C., was the G.O.C. the New Zealand Division at the battle for Mersa Matruh ; during the last war he was wounded on innumerable occasions, and at Mersa he was wounded once again. He received a shell splinter in the neck, and was taken to a field dressing-station, when shelling by the enemy again started : he was removed to a slit-trench, and placed under a canvas shelter, as seen above. Blast from a shell nearby threw on top of him his aide-de-camp, Lieut. L. J. Griffiths (the All-Black Rugby player), who had been sitting by his side. Subsequently the General was flown back by air-ambulance to the base hospital. It has now been reported that General Freyberg has again resumed duty with the New Zealanders

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A WAR NEWSLETTER —No. 152

1, NEW OXFORD STREET, W.C.1.

Russia—and Her Allies.—

No sentence printed or spoken during recent weeks had a greater significance, or was more pregnant with meaning, than this, which occurred in a Soviet statement to foreign correspondents in Russia: "From their Allies they [the Red armies] ask for the greatest possible measure of common action, and they make this request in the light of all the military knowledge which M. Molotov gained when he visited London and Washington." To the least informed, the implications of that sentence are clear. The British and American Governments furnished M. Molotov with the vital data which govern the time when a large-scale and reasonably-hopeful land diversion can be expected. The Russians accepted the data as true. Of late, German progress in Russia has been quicker than expected. Russia realises she cannot afford to lose territory, men and material indefinitely—in short, she believed a few weeks ago that she might bridge the time gap. She was not so sure by the middle of July. Let us never forget that far back in the spring she insisted on the need for a resolute diversion *before autumn*, even if her Allies were forced to launch it "before the last button was sewn on." That was, I think, the Soviet phrase used. Our anxiety over this clear and urgent warning can be nothing to that of Premier and President. It must affect their "unalterable determination" not to risk "another Dunkirk"; it cannot but bring them back to that all-important time-factor and compel them to ask themselves again whether the possibility of "another Dunkirk" may not, after all, be a risk that must be run for the supreme necessity of keeping the Red Armies united and in order of battle between Hitler and the oil-fields and supply lines of the Caucasus, and the Nazi hordes and air squadrons tied to the Eastern Front and deeply committed to another Russian winter. For Russia's allies it is largely a question of shipping—without the shipping, no major diversion, having a reasonable prospect of success, can yet be launched. On the other, it is a question of time. It is a question of how large a diversion could turn the scale by relieving the pressure on Russia, even if it were perforce launched with a probability of ultimate failure and heavy loss. It is a fearful problem. That Russia to-day expects us to weigh it instantly I have no shadow of doubt. May those responsible for this fearful decision bring a right judgment to their unenviable task. The man-in-the-street shares to the full their anxiety. For once, his eyes are open to the main implications of the problem and to the essential facts. Loyalties seem to conflict as well as to harmonise. There are loyalties due to Russia, to Britain, to America; and to the Common Cause. "Those who talk loosely about a second front" may be less deserving of the scorn which is poured on them if they justify their presumption by their belief in the overriding importance of loyalty to the common cause.

Fifteen Years.—

A certain Lord, who has been engaged in propaganda work of some sort in America (a professional label nowadays as vague and sometimes as redundant as "something in the City"), expressed on his return to London his belief that the war would last fifteen years. That at least was the view of many Americans with whom he had conversed. Myself, I dissent from his Lordship's judgment. There are Americans—and Americans. His Lordship's contacts were among Americans to whom "the war with Japan is the only war which counts." The war might well go on for fifteen years, theoretically at least, if there were not other Americans who, like their President, take a broader view of the war. Even if there were not, theory is not practice. Total war is making its mark on humanity, showing its teeth. Already in the most favoured countries the machinery of bare existence is showing signs of breaking-up. At the blackest, what is regrettably true of Allied countries is quite certainly true (with knobs on) of Axis countries. This winter the extent of the damage to the machinery of bare existence will be even more apparent. On that I will stake my reputation as a prophet (which is not to gamble very deep). Total war of the present intensity cannot conceivably continue for five years without reducing humanity to a state of primitive barbarism and making a universally accepted nonsense of war. That state of things is already making headway. It is up to us to secure a satisfactory decision in the next two years before that collapse and reaction set in. That can only be done by silent devotion to duty, in which prophecy and promises and jeremiads should have no place.

Exit Slush.—

The B.B.C. have cleaned out their septic tank. It was high time. It took us three years to persuade them of the unwholesome smell. At long last the voice of a great nation has cut out its slushy falsetto. Its vilest negroid importation is henceforth barred. The crooner—the anæmic or debilitated male vocalist—is kicked out. Now thank we all our God. If any Englishman regrets him, let him be sure he is in a minority and let him learn to do without. The blows of chance do, and have done, quite enough to humiliate false national pride and to jolt our reputation in the world's eye, without our adding our own efforts to prove ourselves (what we are not) an anæmic, debilitated race. Because crooning was an ugly mirror of national mentality in the years between wars, it should have been vigorously interned with doubtful characters in September 1939. For three years it has been allowed to continue its deadly propaganda. But better late than never. In our fashions in popular airs over the past fifty years we have ranged between two extremes of folly and bad taste. The junker or boastful . . . and the anæmic or slushy.

"And when we say we 've always won,
And when they ask us how it 's done,
We proudly point to every one
Of England's Soldiers of the Queen."

As for the anæmic, I cannot bring myself to write down the loathsome mélange of heart-beats and heart's sweet. Both extremes have proved dangerous and degrading. Much as I detest national boasting, I preferred the robust to the debilitated slush. Henceforth let the people sing in their natural voice.

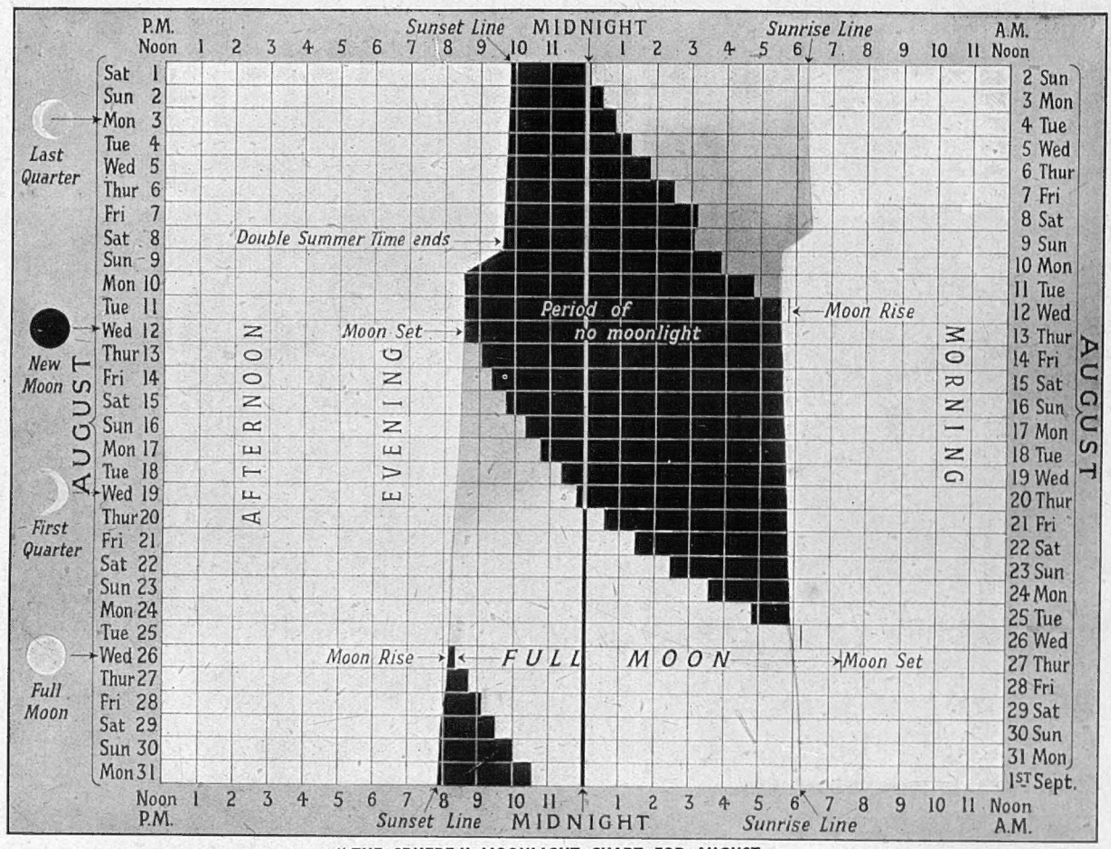
Boasting Again.—

Major Randolph Churchill, as reported by A.P., arrived in New York from Libya on July 22 and predicted to Pressmen as follows: "I think Rommel has shot his bolt. Whatever help he wants must come from the Russian front, and I do not think he is going to get it." If the report of A.P. was correct, I personally add his prediction to a list of indiscreet utterances made by the Premier's son in America at various times. On July 22 the British public knew nothing of Auchlinleck's attack. Nor did Major Churchill's wife know that her husband was in America. It is unlikely, therefore, that the prophecy was inspired or sanctioned by the Premier. Perhaps it was inspired or authorised by General Auchinleck? That, too, appears improbable. It seems, on the face of it, the very last boast which Auchinleck, on the eve of an offensive in an imponderable and anxious battle, after many surprises and humiliating reverses, would authorise or would himself wish made. Major Churchill carries the weight and responsibility of a name. What he says, many hearers will always regard as "semi-official." It matters not if he prove a true prophet. It was one of those utterances which can do no good and may do infinite harm. It was most unwise and mischievous, in default of some justifying explanation; and he deserved to be hauled over the coals once more.

Maids in Uniform.—

Perhaps it is because I am fresh from rereading *Sea Power*, by T.124—that powerful, persuasive book—that I wonder once more whether it is possible, after all, to militarise ourselves too much. When our nation, and, above all, our executive women, become military, they become *fanatics*. We over-militarised in the matter of coal production, and that we acknowledge to have been a bad mistake. Now comes the case of the sixteen-year-old girls. Many of them need badly an aim, discipline, a dawning consciousness that there is a war on, and that sacrifice and preparation are required even of children. Yet I could wish that a yard-stick of some elasticity could be applied to our national problems. It never can be. Myself, I believe strongly in trusting people who seem worth trusting and making generous exceptions to a yard-stick rule. I take the case of sixteen-year-old Dorothy. She was placed by her mother under a wise, kindly housewife and she is now the sole remaining "staff" in a household of seven. She does her bit of household work with the family and, because fresh air is necessary for her—for she is delicate—she is always being chivvied out of doors to share with the elder children the duties of tending the rabbits, fowls and goats, and doing light jobs in the kitchen garden which, now without expert labour, supplies the household the year through. And she enjoys the work. But now all that is over. The militant dictator in uniform has interviewed her, and henceforth Dorothy must bicycle twice a week to a village four miles away on hilly roads to be drilled by a sergeant, and she must buy out of her own money a uniform in blue and white. She does not like the dark, and after August problems will arise. What with her Sunday off and her half-day off (when she sleeps at home), Dorothy's usefulness and health are likely to suffer. But no doubt she will be better qualified to form fours and carry a pike when Jerry comes. I feel somehow that what may be best for Mary Anne, who lived in the drilling village, is not really best for Dorothy; and that Dorothy, circumstanced as she is, was doing better war work as planned by her employer. But war allows no exceptions, and your *Executive Woman* knows best, and trusts nobody but herself.

THE OLD STAGER



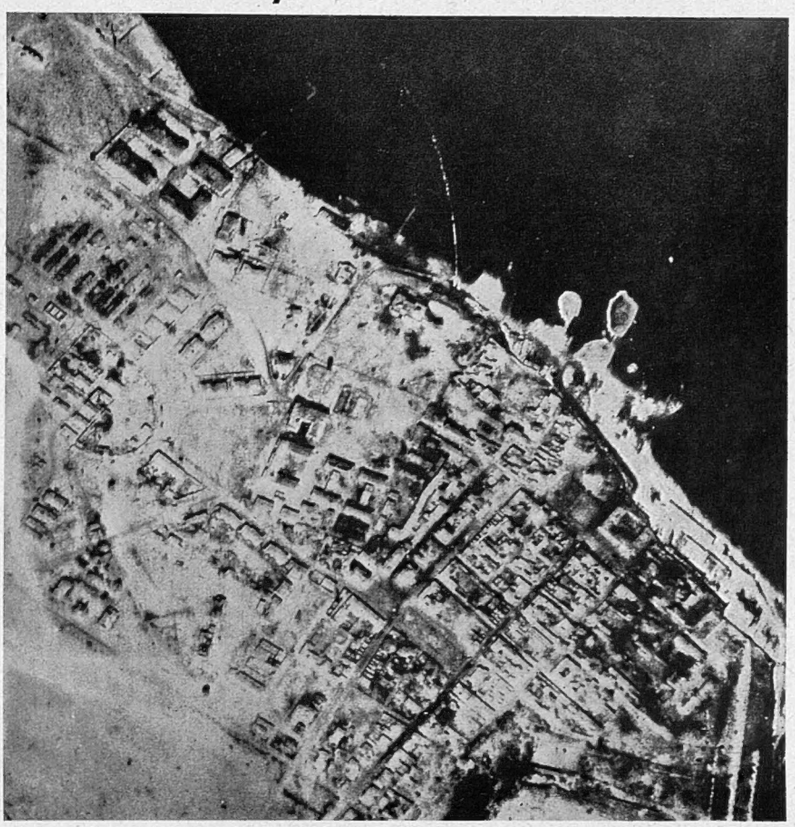
"THE SPHERE" MOONLIGHT CHART FOR AUGUST

Lengthening nights and the end of Double Summer Time are the outstanding features of this August chart. Double Summer Time ends five days after the moon has reached its last quarter phase, and so with putting back the clocks one hour comes also a period of no moonlight. The new moon is on the night of Wednesday, the 12th, and the first quarter a week later on the 19th. The moon reaches its maximum on the night of the 26th, when it rises a little after sunset and sets over an hour after sunrise. At the end of the month the sun sets a little before 8 p.m.

A limited number of these charts will be supplied free of charge on application to the Publisher, "The Sphere," Commonwealth House, 1, New Oxford Street, W.C.1, but 2½d. in stamps must be enclosed with the application

DEVASTATION by BOMBER: *Three Aerial Views of Sebastopol and Tobruk After Heavy Attacks from the Air*

SEBASTOPOL AFTER WEEKS OF INCESSANT POUNDING FROM THE AIR: A picture showing the scene of devastation in the central part of the town

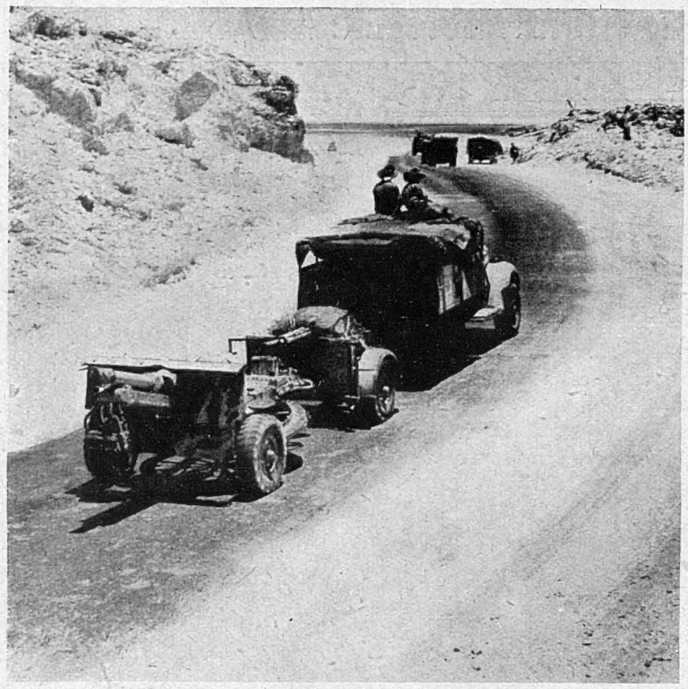


TOBRUK UNDER ATTACK BY THE R.A.F.: Wellingtons scoring direct hits on important targets. This remarkable picture was taken *by night*. It shows three direct hits being scored on two of the Tobruk jetties by British bombs on the night of July 9-10, when Wellingtons carried out an extremely successful raid. Incendiaries started fires which enabled the following aircraft to place their bombs with deadly accuracy. Four large fires along the docks and in the town could be seen over 70 miles away. Bomber crews taking part in the raid included men from the United Kingdom and all parts of the British Empire

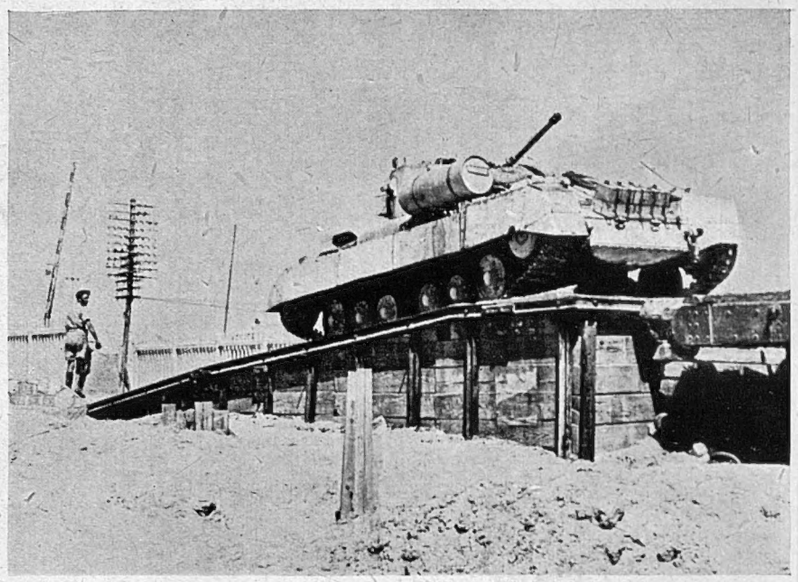
THE CITY OF SEBASTOPOL TO-DAY: Hardly a house or public building still stands, as a result of the incessant attacks by the *Luftwaffe*

The two pictures of the city and citadel of Sebastopol reproduced on this page come from a German source: they were obviously released in order to show the striking power of the *Luftwaffe*. But the pictures do more—they demonstrate the wonderful heroism of the Soviet defenders of the town and harbour! Hardly a house or building remains undamaged. Yet, despite the incessant pounding by a never-ceasing flow of bombers, Sebastopol held out, long after all hope of its relief had gone. Both pictures were taken above the centre of the town: to the east (that is, to the top of the picture immediately above) is the stretch of water separating the city from its eastern portion

SCENES ALONG THE ALAMEIN FRONT



THE AUSTRALIANS ARRIVE AT EL ALAMEIN : Moving up to the forward area with their own 25-pounder anti-tank guns. Their arrival so soon on the scene of battle apparently took the Germans by surprise



TANK REINFORCEMENTS ARRIVE : A new Valentine being unloaded at a desert railhead. Men of the Royal Tank Regiment take delivery and prepare the new arrivals for battle

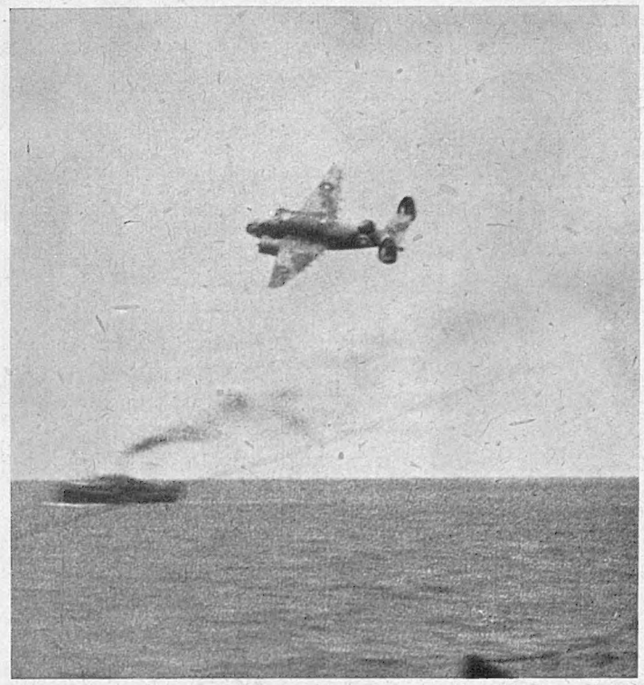
A GENERAL STEWART GETS A HELPING HAND : Being towed out of the El Alamein battle by another tank. Much tank-recovery in recent battles has been effected like this, when a tank is knocked out in an area which is too "hot" for the tank-recovery vehicles to approach

'WARE MINES ! British troops and transport drivers must be careful not to disturb the harmless-looking "vacuum flasks" which the enemy leave behind. These have often been proved to be mines

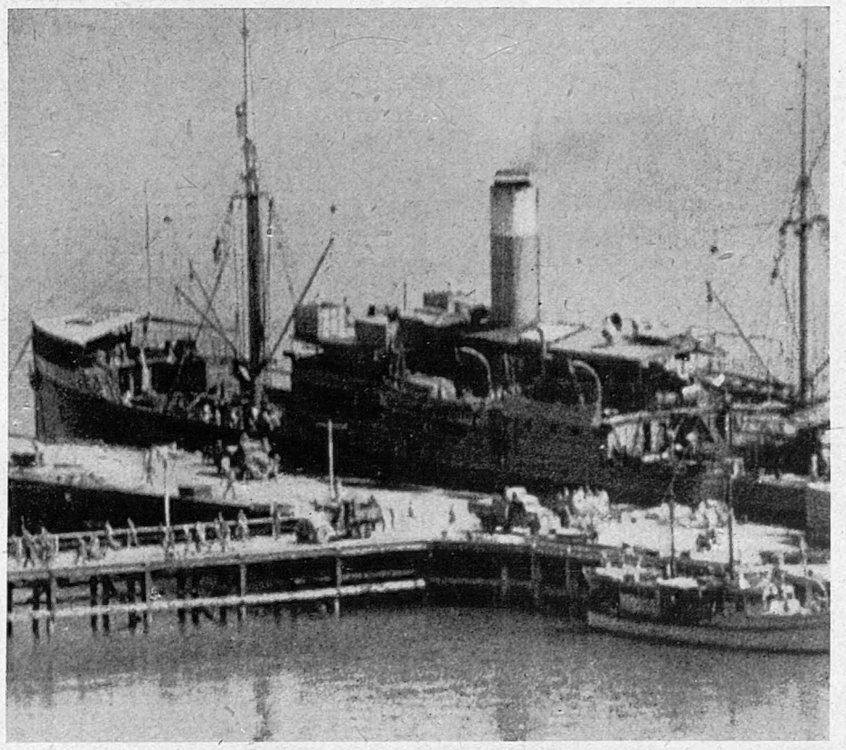
A REGULAR FIELD-ARTILLERY UNIT IN ACTION AT EL ALAMEIN : This Field Regiment of R.A., with its 25-pounders, has only been in the desert a short time, but it has done tremendous damage to the enemy. The Regiment left India twelve months ago, and has since been in Syria and Palestine. In the recent fighting, the battery was at one time constantly under enemy fire, and the order was given : "Sit together and fire until out of ammunition." This it did, losing several guns in the action

WHAT CONDITIONS IN THE DESERT ARE LIKE FOR DRIVERS : This warning is prominently displayed at a road junction at Amirya : it emphasises one of the dangers to which Convoys are exposed when traversing the desert tracts where surprise is an ever-present possibility

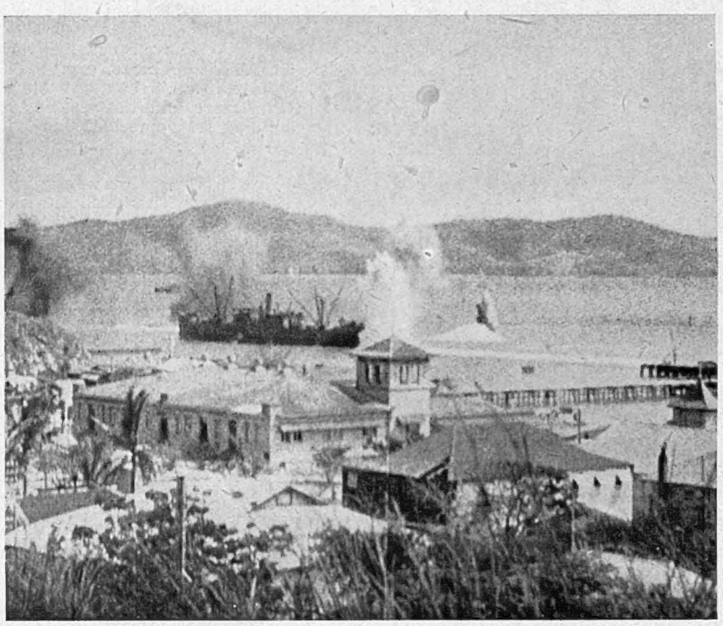
The JAPS ATTACK at MORESBY



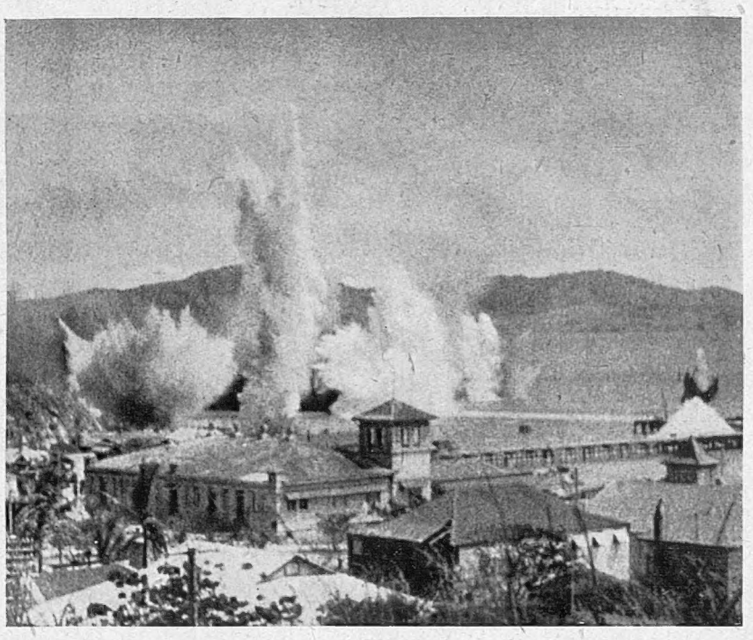
A UNITED STATES WARPLANE CIRCLES OVER A SHIP in an Allied Convoy as troops, equipment and supplies reach Port Moresby, in New Guinea. This picture was made from the deck of another ship in the Convoy



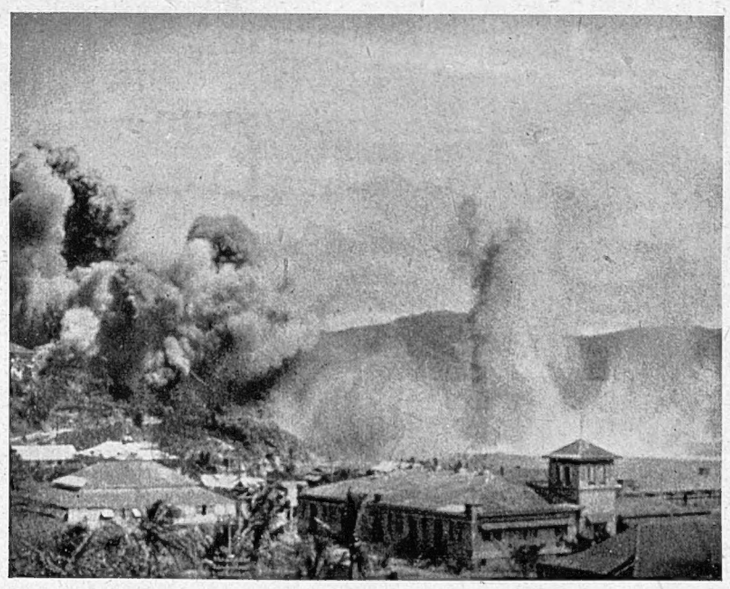
TROOPS AND STEVEDORES AT WORK ON A RECENTLY-ARRIVED CONVOY RUN FOR SHELTER as an air-raid alarm interrupts their work. Port Moresby has been subjected to continuous and heavy attack for months past by Japanese bombers coming from bases in the South-west Pacific



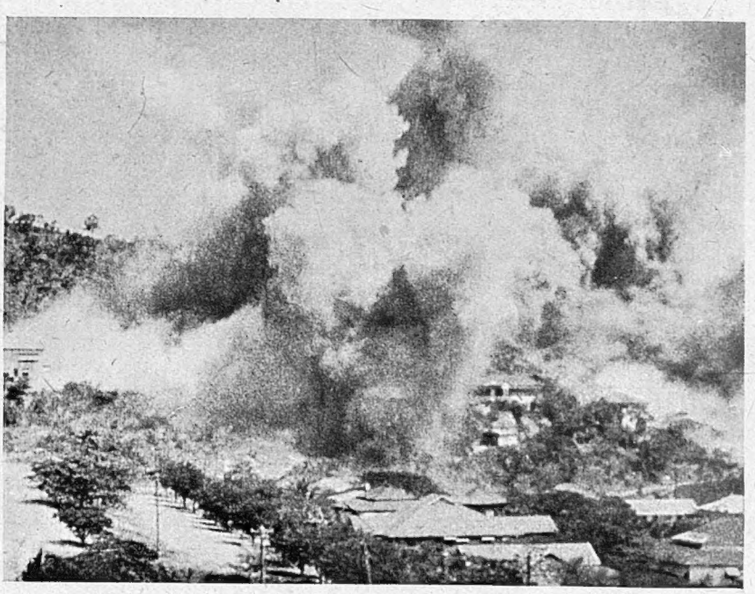
BOMBS SPLASH AROUND A U.S. SHIP IN THE HARBOUR as a Japanese bombing fleet gets the range of vessels which had just arrived in a Convoy bringing reinforcements to New Guinea



ALMOST OBSCURED NOW BY BOMB-BURSTS is the same American vessel. The Japanese bombing aircraft arrived before the ship could be unloaded, and then proceeded to raid the harbour



HAVING COMPLETELY ENVELOPED THE VESSEL (lost in smoke on the right), the Jap bombers turn their attention to the land installations of the town itself



FLAMES AND SMOKE POUR FROM BUILDINGS IN THE PORT, as the Jap bombers maintain their heavy attacks on the U.S.-Australian base in New Guinea

THE GERMAN WEAPON OF FAMINE

The Organisation of Hunger as a Determining Factor in War is Now Being Carried to its Logical Conclusion by the Nazis. Possibilities Arising Out of the Russian Campaign are Discussed Here in the Light of what has Already Taken Place Throughout the Occupied Territories

By FERDINAND TUOHY

THERE exists a comfortable school of thought which maintains that, even should Timoshenko go back and back, all will be remediable provided Hitler still has Russian armies confronting him when winter comes again. The Nazis will never be able to stand another Russian winter.

At the risk of being called a Dismal Johnnie, this overlooks a Russian handicap which has become more severe as a result of the eastward flow of the present campaign. Last summer Budenny lost the Ukraine, but not before most of the crops of that vital producing region had been gathered. This summer the Russians have been steadily ceding immense tracts of their remaining rich food country in the south, together with much of the rail and river transport systems over which food supplies are normally carried. The difference this time is that the enemy's overrunning has occurred *before* the crops have been taken in. "The Russians have lost the rich agricultural area between Kursk and Kharkov and the upper Don." "All along the Don the peasants are working giant harvester combines day and night." "Unprecedented efforts are being made to send east the winter harvest from the Stalingrad region and also from the Kuban, the rich agricultural area south of Rostov."

War having engulfed the Don and Donetz regions, what cereals weren't gathered by mid-July have probably been largely lost—particularly since the Germans are burning crops wherever they go, part of their new famine-inducing policy. As for the even richer Volga region which feeds industrial centres now so vital, as far away as the Urals and Asia, we see a race with time to evacuate grain and corn.

First hints of food difficulties are coming to us from Moscow, and those who choose to remember cannot be other than perturbed. Russia is a land tragically known for its famines, and if one should break out at all comparable to that of 1921, it might be Timoshenko's men who wouldn't be able to endure, and not the well-nourished Nazis facing the Russian winter. I do not believe anything calamitous is likely, but it is quite possible that Soviet soldiers will become physically weakened, man for man, measured by their Nazi opponents.

Those who knew the American Relief in 1921 would agree on the impossibility of appreciably succouring whole armies at the height of a war like this. But the Allies may yet have to send dried foods on a vast scale to Russia. In the total war our Allies are waging, millions of vitally-involved civilians will be unable to produce and labour effectively if assailed by hunger. They and the soldiers will be cared for first; but there will always remain the great mass of the population which cannot in any way be lightly put aside in this matter.

Hunger is the great invader of national stamina and of the will to resist, and be sure that Hitler is thinking every bit as much about it in Russia's regard as he is of the oil of the Caucasus. Famine! He aims just as much to bring that about as he seeks to deprive Russia's armies of the means of movement.

In fact, signs are not wanting that the Nazis are beginning to employ organised hunger as a weapon wherever the movement to be rid of them is most intransigent. Until now they have spread hunger by a mixture of greed and looting for their war effort. It has been their policy to maintain sufficient bodily strength in their victims to enable these to work for the Nazi war machine. The new idea is to apply starvation pressure on the assumption that even with the dauntless there comes a breaking-point if hunger stretches ahead without visible end, that there arrives a time when men and women become dully resigned from sheer physical weariness. A varying degree of deliberately-contrived famine is expected this coming winter in Norway, France and Belgium. In Greece, Poland and Occupied Russia, countries whose inhabitants the Nazis treat as vermin, no need to wait for winter. Nine hundred dying a day from hunger in Greece; the Poles on one-quarter of their peacetime nourishment; the overrun Russians . . . but no one knows how they are keeping on their legs.

In the West, Belgian children fainting in the schools; French youths unable to withstand more than three hours' physical training a week; on all sides, the infirm, old and even the middle-aged dying off prematurely; organic disease leaping upward; mothers bearing infants of no resistance, and each fading away. The picture is shocking enough, without any added devilry.

THE RUSSIAN COMMISSAR WITH A VERY BIG JOB: This is People's Commissar of Railways, A. Khrulev, at work at his desk in the Soviet capital. The efficient organisation of supplies for Russia's vast fronts depends to a very great extent on his work

We in Britain who know little about hunger (except where it can be avoided by social effort) need to keep constantly before us the conceivable repercussions of prolonged hunger in the occupied countries. Those who receive letters from the Continent have probably identified a warning note in the constant writing about hunger that fills sheet after sheet, seeming to call: "Come before it's too late!" One does not suggest or believe there'll be any substantial weakening or cracking this winter, unless real calamity befalls the Allies, but people who talk blithely about 1944 need to be led away to the cloak-room.

I think it a fallacious view that Hitler will not aggravate hunger lest by so doing he precipitate revolt. If organised hunger promises to bring people to a resigned "collaboration" where other means have failed, he'll use it—as indeed he is already doing. He'd like it otherwise. His game is to lure all these unfortunate people into his web, so that only when it is too late will they discover what they've become—permanent toilers for the *Herrenvolk*, as proclaimed by Nazi bosses in advance.

But if these people *won't* play, then the risk of their rising is unlikely to intimidate Hitler, on an all-out gamble and holding all the weapons and gadgets with which to bludgeon civilian revolt.

It is significant that the Nazis no longer take much trouble to put over the yarn that the Continent's plight is due to the British blockade. This would indeed be difficult after an article in *Signal*, Goebbels' elegant darling, edited in all languages, and showing at every kiosk, which proved that the English blockade was useless!

The French had it in their edition, too, although they didn't need to be told that the threat of famine looming for the fourth winter of the war has small relation to the British blockade. They *know* that their 1941-42 food production was 80 per cent. of normal, and wine the same, and that the present position is overwhelmingly due to the Nazis helping themselves like drunken burglars. The French *know* that maize and fodder are the only staples appreciably affected by the blockade. And that the other staple commodities—bread, meat, milk, potatoes and wine—are being reduced to famine proportions for two reasons: the Nazis wish to dangle food before the German people, who know the harvest was very bad, and that two years of wholesale animal slaughter is coming home to roost, and the Nazis intend to develop a deliberate policy of pressure by organised starvation. The word "starvers"—"*affameurs*"—is heard more and more.

The Nazis have a new line with their victims. A brazen one. "All you have to do," they say, "is to produce more, and then you'll have something for yourselves."

And when the extra is produced, they requisition that too.

The French peasants were among the first to rumble the chill truth: that the more they produced and consigned to the towns, the more the Germans seized. So the peasants retorted to being thus "put upon" by consigning even less than formerly to the towns, which is exactly what the Nazis want. They don't bother about the peasants who, with moderately-filled stomachs, are more or less passive. But the more resistant townspeople shall be made to starve, for that is the way to induce a resigned acquiescence.

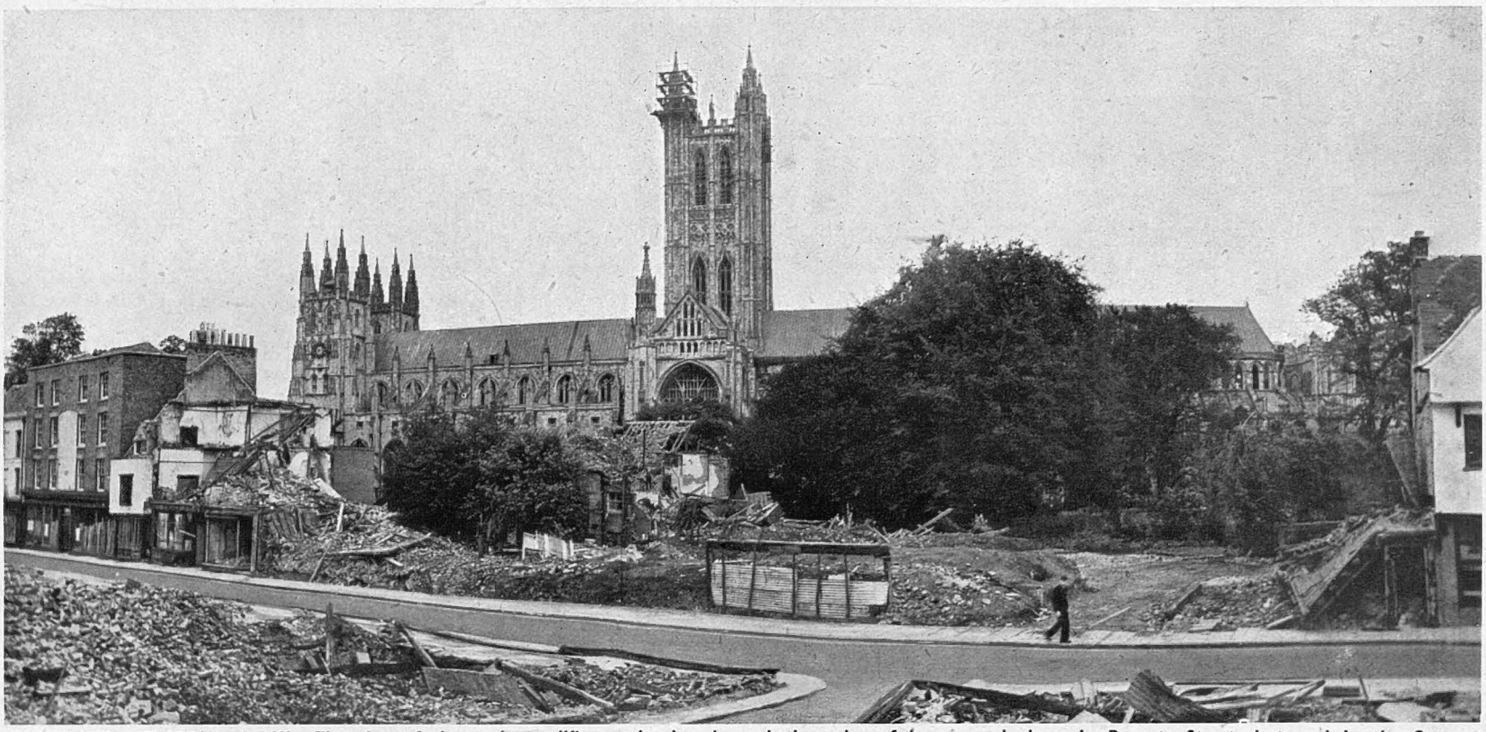
The Nazis are building up food stocks to meet evil days they feel may be coming, and by the same pillage and hoarding are developing their policy of hunger, starvation, famine, designed to throw the enslaved peoples into the hands of their quislings, at long last. The quislings are, of course, standing by with their universal remedy of full collaboration with Hitler. Just as they destroy seed potatoes in intransigent regions where potatoes have so far kept brave souls going, so they promise a speedy arrival of what would be a food heaven in hungering lands, if the New Order is accepted. Such is the situation from now on, and it will assume new dimensions with the coming of winter—the third war winter of privation.

As for schemes to get food to the stricken lands through the International Red Cross, surely the Nazis would gather most of it up, if only because to do otherwise would be to frustrate their new policy of pressure by hunger? The Axis, or Germany, does not want starvation to be relieved in territories whose inhabitants persist in showing spirit. That is the long and the short of it, and Hoover humanitarians may as well swallow the grim fact, however unwelcome it may be in some quarters. The best one can reasonably hope is to get through vitamins and medicaments, and dehydrated milk and eggs, for distribution among mothers and children, and the sick and aged. Incidentally, this would be peculiarly satisfying for British people, in that the blockade does affect milch cows through the absence of maize and fodder.

The United Nations are storing vast quantities of foodstuffs with which to rush to the rescue of Europe . . . when? That is the issue. Hitler must not be given long enough to sap resistance, in the meantime, by inducing hunger and even famine, as he will not forbear to do wherever the policy seems good to him.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this publication should not be taken as an indication that they are necessarily available for export

WAR ITEMS FROM THE HOME FRONT

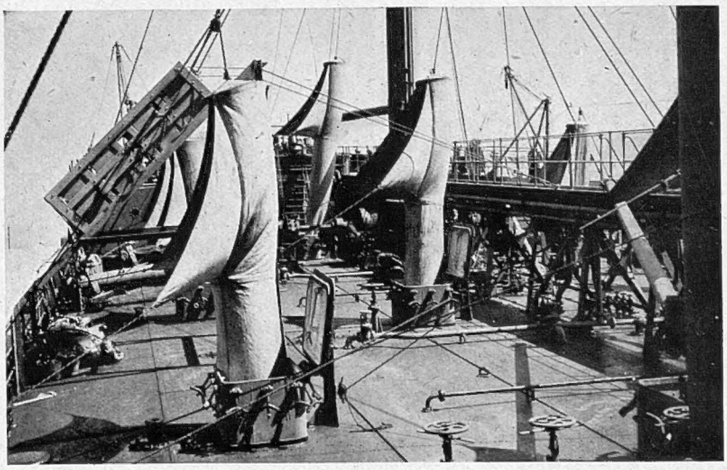


CANTERBURY CATHEDRAL TO-DAY: The view of the ancient edifice as it rises beyond the ruins of houses and shops in Burgate Street destroyed in the German raid on June 2. The Cathedral itself was not hit (as was announced some time ago), but the adjacent Library was demolished: bombs shattered the Deanery and destroyed Chapter residences, and the damage by blast blew out scores of windows in the Cathedral. The attempt to burn the fabric by hundreds of incendiaries failed, but many historic old school buildings—to say nothing of shops and residences—were destroyed in this German "spite" raid

THE NEW MINISTRY OF WORKS FLYING SQUAD, with the pre-fabricated huts they have just built and the mobile vans in which they sleep

A fleet of six-wheeled road vehicles, lettered "Ministry of Works Flying Squad," have just put out from a field somewhere in England where they stood since arriving late at night on the last day of June. The Flying Squad of thirty-five men began work early the next morning; within sixteen days they had completed a job that has never before been done in quite the same way, nor so expeditiously. The purpose of the Flying Squad is to cut out the delay of about three weeks between the date on which tenders are invited for a construction job and the actual start of the work by the contractor. The first job undertaken provided accommodation for the advance party of the main contractor. For the erection of seven pre-fabricated huts—three dormitories, one canteen, one store and two offices—and for putting down rough roads of hard core and clinkers, the scheduled time was twenty-one days. The achievement was all the greater because 2,600 tons of earth and gravel had to be handled in levelling the ground

MASKED MEN OF THE TANKERS: Chinese members of the crew of a British tanker practising lifeboat drill in their asbestos protective clothing. The latter has been provided so that the sailors may still take to the boats and row to safety even if the sea is covered with blazing fuel

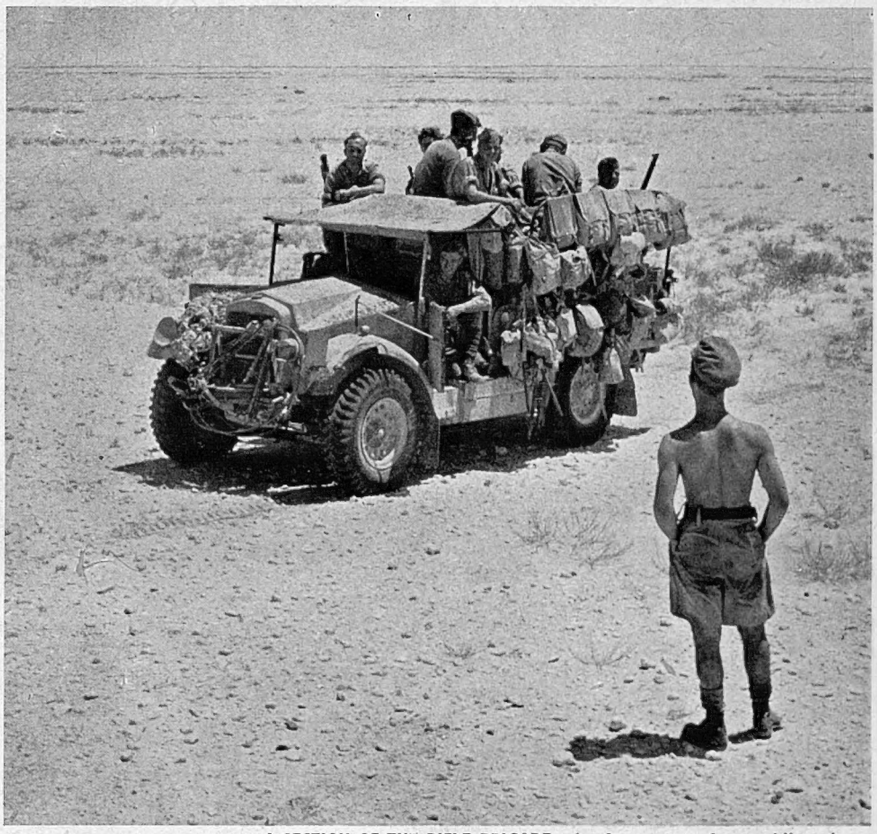


DE-GASSING A TANKER, by means of ventilators after the cargo has been discharged. The dangerous gases in the tanks are blown out by canvas ventilators: these catch the wind and lead it right down into the holds, after the precious cargo has been safely unloaded in a British port

The BATTLE LINE in EGYPT

New Official Pictures from the 8th Army

ADVANCED BRITISH MOTOR COLUMNS HARASS THE ENEMY : The type of men who take part in the attacks on the German lines of supply : Reports from Egypt before Auchinleck's big offensive told of the splendid work carried out by our men in operations actually within enemy territory in the Alamein sector. Motor brigades, such as those illustrated here, have been sent out to locate enemy supply lines and to attack these with infantry and artillery. Valuable and urgently-needed supplies for the German front line have thus often been arriving too late for them to be of use. The columns are away for days at a time



A SECTION OF THE RIFLE BRIGADE who form part of a mobile column setting out on one of their raids into enemy territory

ONE OF THE 25-POUNDER GUNS being assisted out of soft desert sand during operations in advance of the British lines

CAPTAIN TIM MARTIN, adjutant of a raiding column, who wears his earphones the whole time. He is jotting down the various enemy locations on his map

AN ENEMY STUKA GOES UP IN FLAMES, to prevent it falling back into German hands : Enemy planes which now crash, or force-land, in the desert are burned by the nearest British unit whenever possible, to prevent spare parts likely to be of use from falling into the hands of Rommel's men. This Stuka was set alight with petrol ; the swastika from the tail was probably removed as a trophy : empty ammunition-drums are lying in the foreground

A SECTION OF THE RIFLE BRIGADE cover a post with machine-guns. These tough fighters, armed with Vickers guns, Bren guns and ordinary rifles, have done fine work in the desert

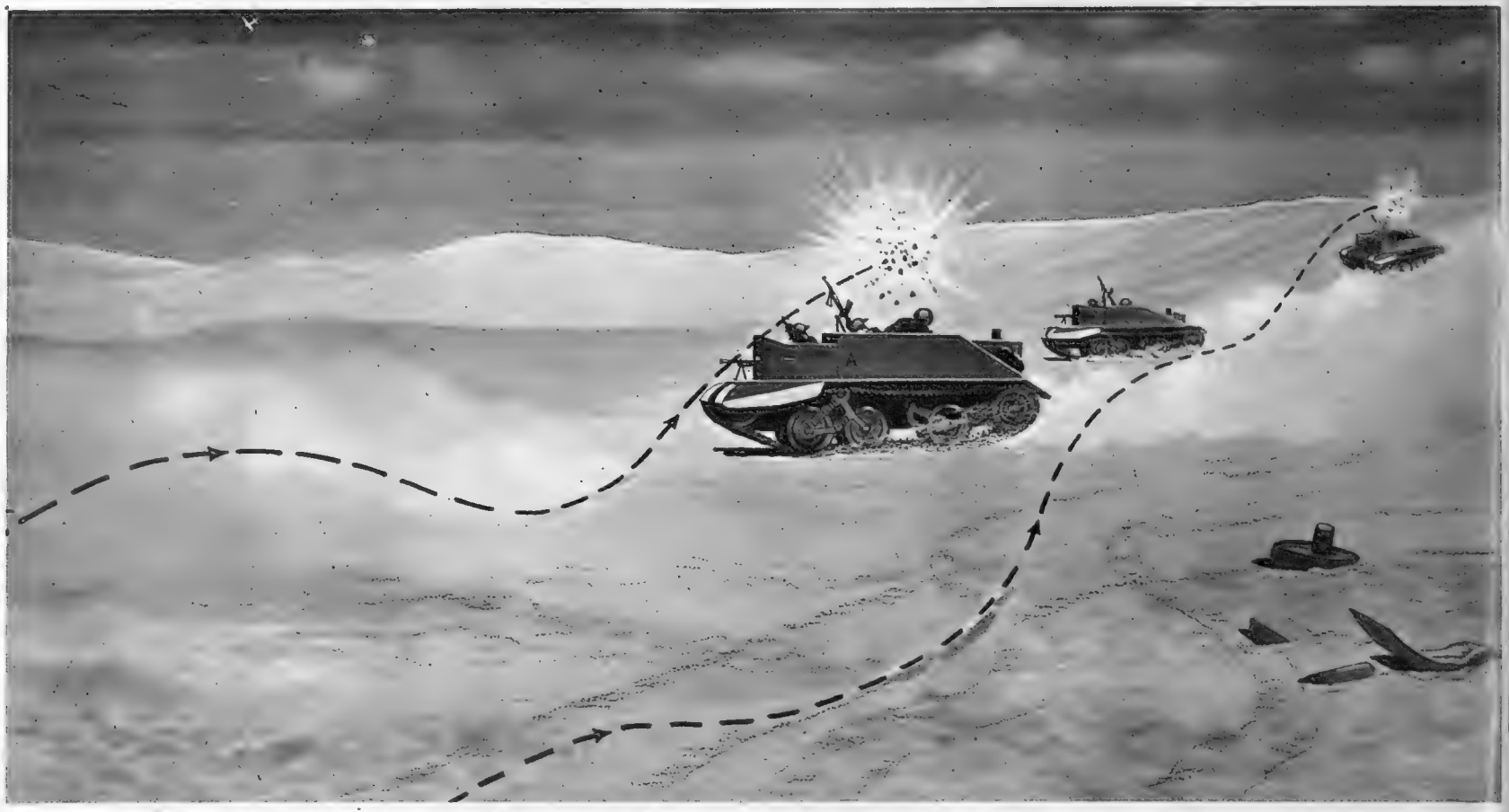
THE 8TH ARMY STANDS ITS GROUND AT EL ALAMEIN and digs in to resist Rommel's further advance towards Alexandria: The scene in the desert as a party of artillerymen work at the task of preparing emplacements for a battery of 3·7 anti-aircraft guns before General Auchinleck ordered his general advance

AN AMERICAN COLONEL GREETS HIS NAVIGATOR-SON after a raid on Tobruk: When the twenty-four-year-old First Lieutenant-Navigator of a giant U.S. Army bomber touched down after a raid on Tobruk, he was greeted by his fifty-year-old Colonel, who is also his father. The Colonel comes from Denver, Colorado; but his son (on left) was born in England

MEN OF THE ROYAL CORPS OF SIGNALS laying a cable whilst enemy shells burst all around

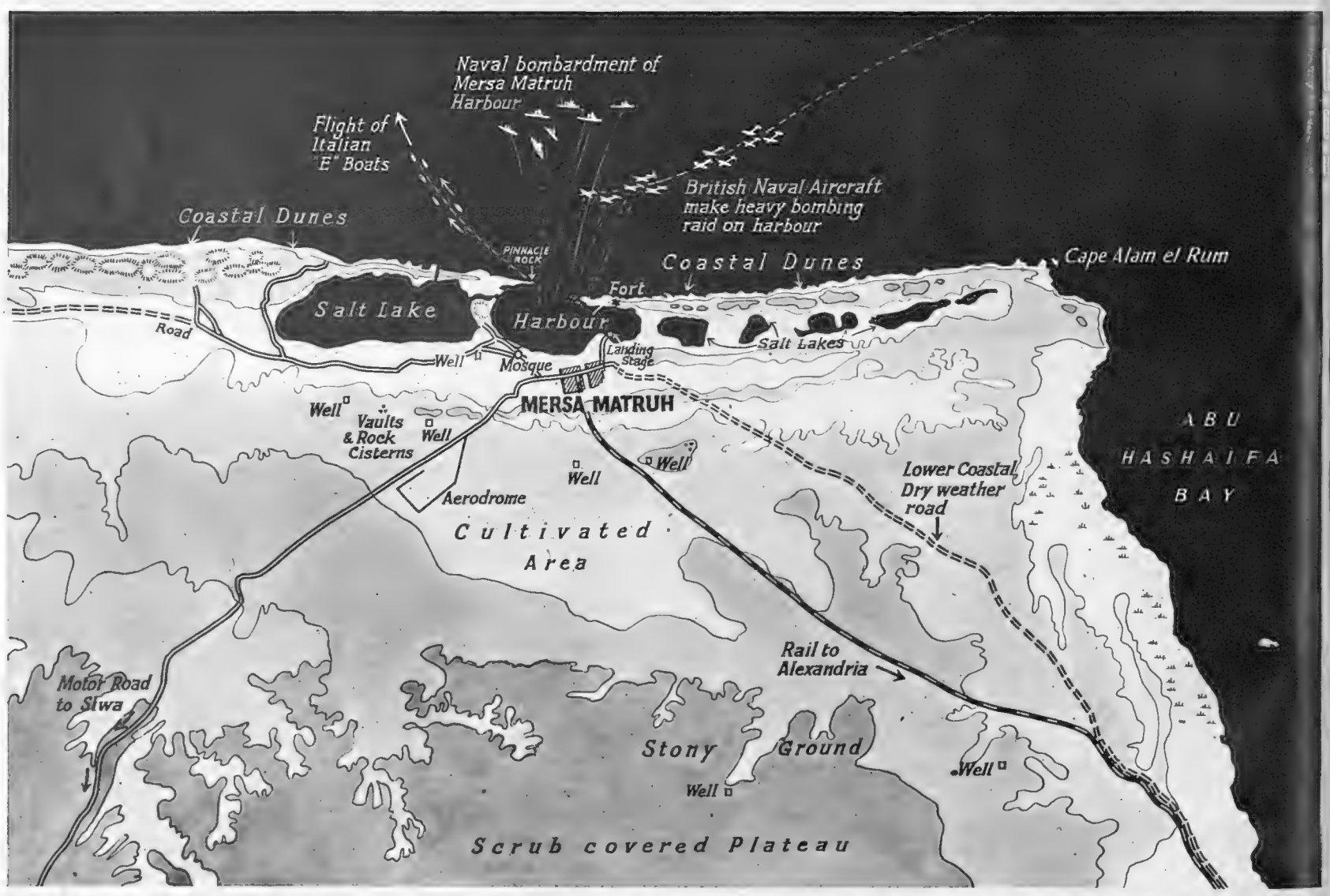
THE HOLE IN THE DESERT SAND: A maintenance engineer at work on an underground cable: this is reached through a manhole in which the engineer stands to test the lines. Communications, a vital part in modern warfare, must be maintained intact all the time during battle

THE BATTLE LINE IN EGYPT *(continued)*



"JUMPING JACK" MAKES HIS APPEARANCE ON THE EGYPTIAN BATTLEFIELD: First details of the new "anti-personnel" shell which Rommel has been using against our assault troops in the desert. This drawing shows how the new weapon actually operates—*Drawing by L. Ashwell Wood*

"Jumping Jack" is so named by our troops in Egypt because of the curious manner in which it operates. At the end of its predetermined range, the shell bounces up off the ground, flies towards the target and explodes just above it. "Jumping Jack" is not intended to demolish big obstacles in its path, but is what might be termed an "anti-personnel" shell. Rommel's artillery has been using this weapon during the recent fighting along the Alamein line, where his concentration of guns of all sorts was formidable. In addition to this new shell, the Germans have also been reported to be using a new type of mixed wheeled-and-tractored long-range machine-gun: this resembles our own Vickers gun, but it is much more mobile



THE BOMBARDMENT OF MERSA MATRUH HARBOUR BY THE ROYAL NAVY: A map showing the formation of the sand-dunes and salt lakes which is typical of the whole coastline along this strip of Egyptian territory—*A Special Sphere Map*

The first naval attack on the harbour of Mersa Matruh, one of Rommel's supply bases on the Mediterranean and the nearest to his advanced positions at El Alamein, was accomplished with success. Seven hundred shells were poured into the small harbour area rapidly and effectively. The first attack was followed by another, and still another—so that the Royal Navy was in action at the same spot three times in four days. The harbour has a constricted entrance; it has been suggested that the Axis merchantman which was sunk near here during the first attack may have blocked this entrance—either wholly or in part. As Rommel needs every available landing quay along this stretch of coast, any impediment would be of advantage to the Allies. The map given above shows how the harbour is in reality part of a chain of lakes separated from the sea by a ridge of limestone dunes. In the case of Mersa Matruh there is access to the sea, whereas the other stretches of water are wholly cut off by the dunes. Immediately south of these lakes is the narrow coastal plain, which is liable to flooding in the rainy season. Farther to the north, the higher desert level presents an escarpment ridge much broken into by wadis: here a large number of ancient cisterns, and more recent wells, are to be found, and these are of great value in supplying water to the troops. This stretch of country is very typical of the whole coastal belt from Mersa Matruh to El Alamein

AN UNUSUAL SIGHT DURING THE AIR FIGHTING IN EGYPT: British bomber forces, with fighter escorts above, passing German bombers and fighters in mid-air. Both sides were too intent on their respective missions to break off and engage each other!—*Drawing by Roland Davies*

After the British retirement to the positions at El Alamein, the superiority of the R.A.F. over the *Luftwaffe* became obvious to both British and Germans alike. Above our infantry and artillery "wave after wave of bombers and fighter-bombers" have been going forward. According to one observer, the R.A.F. have averaged one wave every twelve minutes, clearly visible from one spot alone. Meanwhile, all along the vital Alexandria-Cairo road—lifeline of the 8th Army—hawk-like fighters ceaselessly and vigilantly patrolled our supply line to the East. The incident depicted by Mr. Davies above occurred during this period of intensive air activity. An R.A.F. armada, composed of four layers of bombers and escorting fighters, were winging westwards, when they encountered a similar enemy force winging eastwards: so intent was each that no attempt at combat was made—each force proceeding rigorously to the performance of its allotted task

THE R.A.F. ATTACKS ON ENEMY LANDING-GROUNDS IN THE ALAMEIN REGION: The concentrated assault on El Daba on July 19—*Drawing by Roland Davies*

The raid on the Axis landing-ground at El Daba was carried through in spite of dust-storms. It was beautifully timed and highly successful. Our strong force, composed of light bombers, fighter-bombers and a fighter escort, found the landing-ground crowded with enemy aircraft. The light bombers went in first, and although the enemy planes were well dispersed, several direct hits were seen and one large four-engined aircraft was set on fire. Then the fighter-bombers swooped down, intent on following up the light bombers' work. But before they could unload their bombs they had to turn to meet unexpected interference. A large number of enemy planes, including many troop-carrying Ju.52s and Stukas, was seen approaching the landing-ground. Our machines promptly engaged them, with such success that they rapidly shot down four Ju.62s and one Ju.87. They then proceeded with their task of bombing their original target. Finally, diving through the thick clouds of dust which now enveloped the landing-ground, they put the finishing touch to their work by a thorough strafing of grounded aircraft

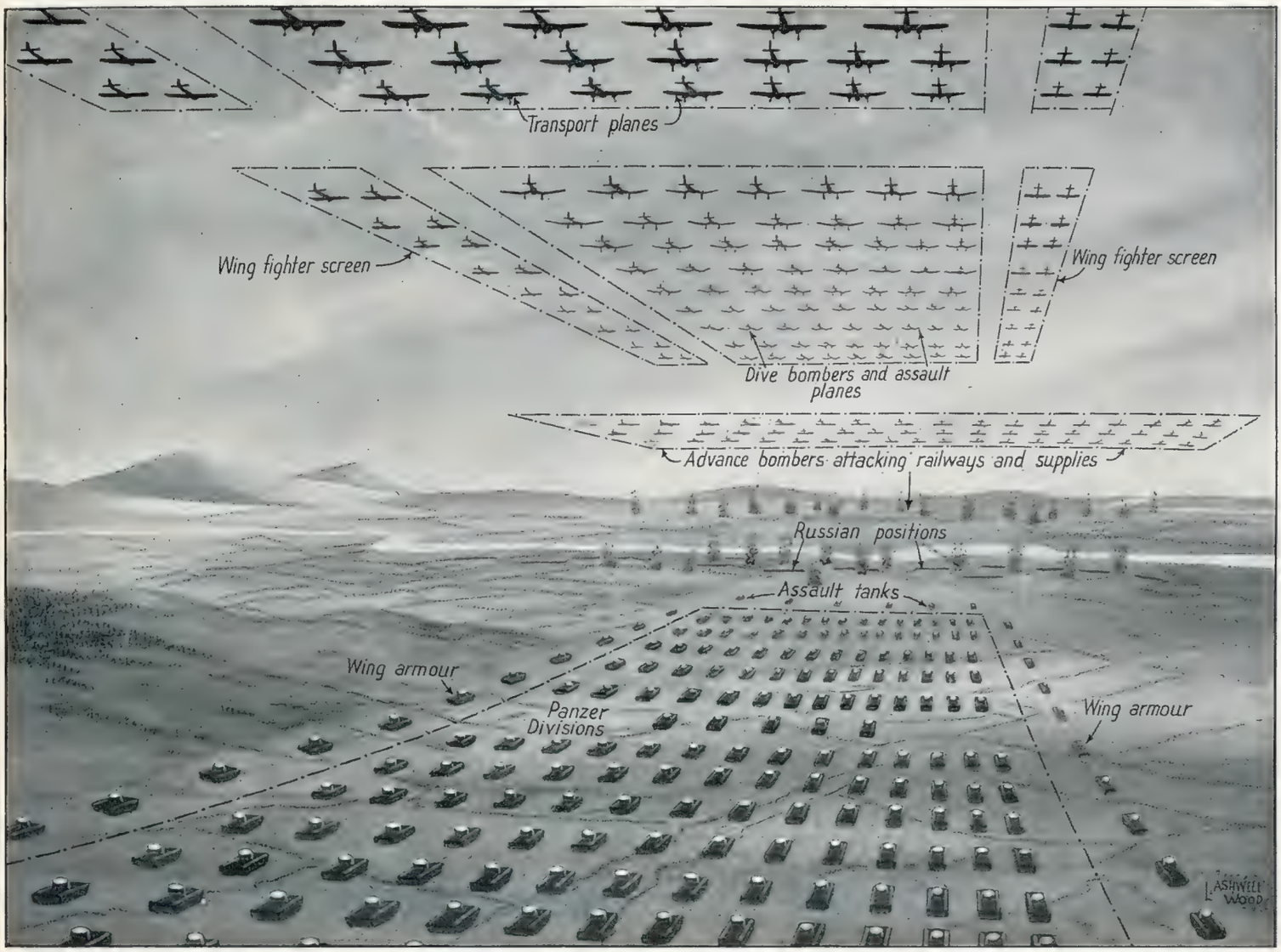
TANKS and AIRCRAFT in CO-OPERATION on the RUSSIAN FRONT

THE NEW GIANT RUSSIAN TANK—THE 40-TON "KLIM VOROSHILOV" (which the Germans have christened "The Monster"). This made its first appearance in the fighting between Kursk and Bielgorod. When going into action, it carries as many as twenty "Tank Descent Troops" round its main turret—*Drawing by L. Ashwell Wood*

The "K. V." is the largest tank made by the Soviet: in tank duels on the battlefield it has already shown itself more than a match for any of the German fighting vehicles. "There have been bigger tanks in the U.S.A., such as the 'Sherman 52-tonner,'" said one man who inspected the new giant, "but few tanks can exceed the 'K. V.' in power or in excellence of design." The tracks are all steel without rubber links, about 26 ins. wide; the engine is a Diesel; all seams are welded and not riveted, thus making the new tank impervious to attack by bombs thrown against the exterior. There is a long-barrelled, 76-mm. cannon and three 7·6-mm. machine-guns in the main turret and a 40-mm. gun and two more 7·6-mm. machine-guns in the forward turret. There is also a mounting top and turret for an anti-aircraft gun. The armour of the tank is so heavy that it is impervious to attack by hand-grenades and by most calibres of German anti-tank weapons. When the "K. V." goes into action it often carries as many as twenty men clustered around the turret. These are "Tank Descent Troops," who are armed with tommy guns, grenades and light mortars for the mopping-up of advance German posts. The enemy have nothing to equal the weight of the "K. V.": their heaviest tank is the T4, of about 24 tons, which is probably more manœuvrable but does not have an armour at all comparable to the Russian giant

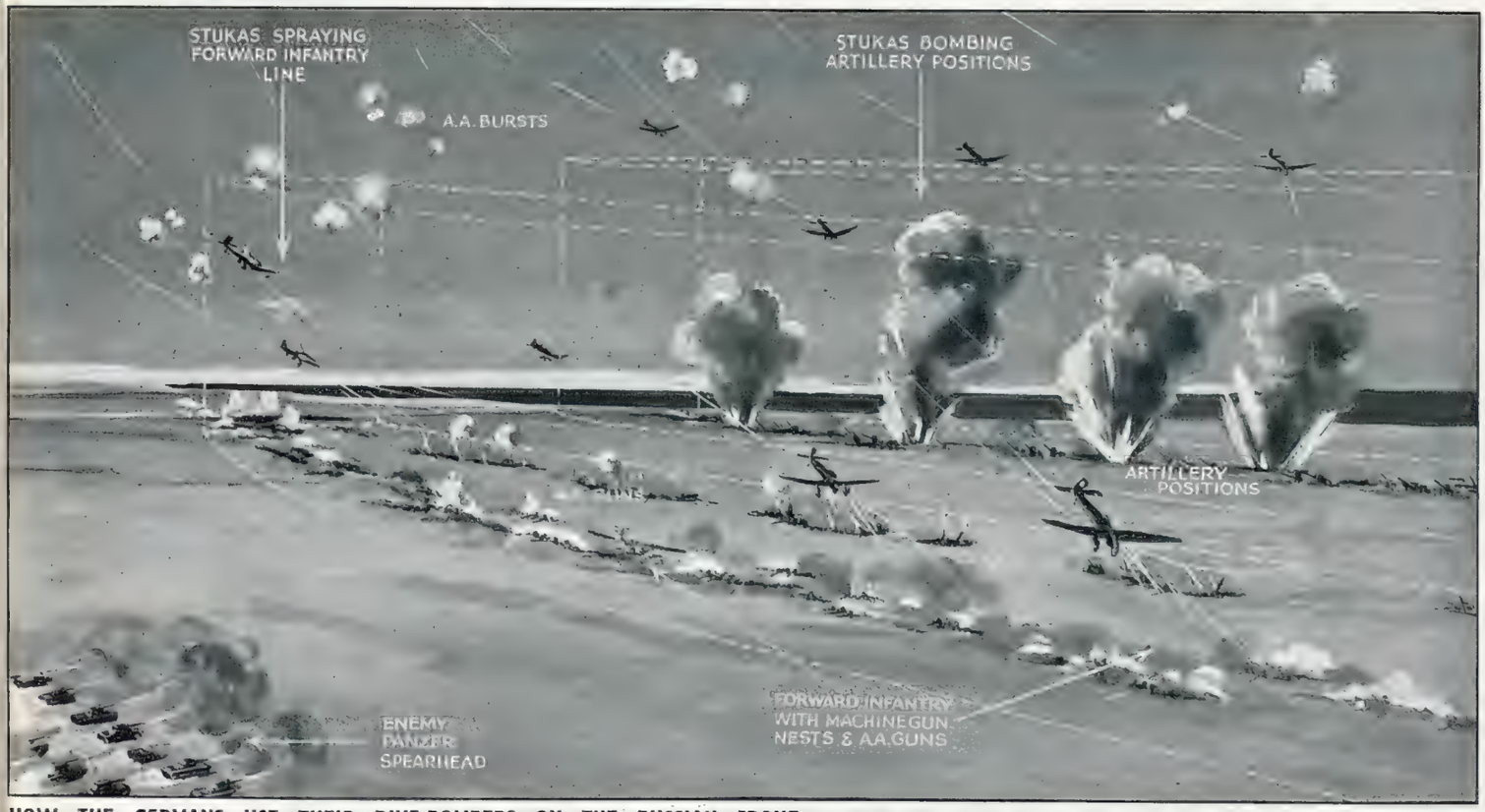
THE BRITISH "MATILDA" AND "VALENTINE" TANKS HAVE NOW BEEN MENTIONED IN THE RUSSIAN WAR NEWS: Both types are stated to be operating in the thick of the fighting and to be doing good work with the Soviet land forces—*Drawing by E. G. Lambert*

It was only at the beginning of last month that the presence of British tanks at the Russian front was made public in this country. For a long time past British tanks have been streaming into Russia by way of Murmansk and Persia; but such is the Soviet's leaning towards secrecy (which has certainly profited them well on many occasions) that no references to their arrival or use had been officially made before. On June 1 the first descriptions were given in British newspapers of the presence of "Matildas" and "Valentines," after enemy propaganda had been busy over the alleged mishandling of the British tanks by Russian soldiers. Now it would appear that all the initial training and other difficulties have been overcome. Mr. Oliver Lyttelton, Minister of Production, has already stated that we are sending fifty tanks a week to Russia, as well as quantities of other material



THE AIR POWER OF THE GERMAN PANZER DIVISIONS: THE GERMAN HIGH COMMAND MAINTAINS THAT AN ARMY CORPS MOVING ON LAND DEMANDS AN ARMY CORPS IN THE AIR FOR SUPPORT. Bombers, fighters, Stukas and transport planes all work with the armoured divisions—*Drawing by L. Ashwell Wood*

For some time now the German Staff has maintained that in the latest developments of the war an Army Corps below needs no less than an Army Corps above. From the Don front have come reports that there have been one dive-bomber for every assault tank moving up, and that 2,000 tanks were accompanied by 1,500 aircraft. The supporting air fleets are not simply made up of Stukas, however; the Germans have, in fact, developed their air fleets exactly as they did the Panzer divisions. Bombers, fighters, Stukas and transport planes work as a whole and not as separate units. The pattern of attack has therefore to be seen as a whole—the dive-bombers and the assault artillery in front covered by a fighter-screen, while bombers operate ahead attacking such railway junctions and road crossings as stand in particular relation to the immediate battle. The formations with which the enemy advances into battle at any given point would therefore approximate those given in the drawing above, wherein the composition of both land and air units is summarised in diagram form



HOW THE GERMANS USE THEIR DIVE-BOMBERS ON THE RUSSIAN FRONT, BY MASSING THEM IN CLOSE FORMATION for attacks at points where the armoured divisions are to make their break-through. Not only are the infantry attacked, but the anti-aircraft batteries and the artillery positions are bombed until it is thought that the Panzers can launch their attack—*Drawing by E. G. Lambert*

"NO WEAPON IS EVER OBSOLETE"

Bayonets, Trenches and Reserves are Amongst "Old" Methods which should not be Entirely Abandoned in the Present War

By DONALD COWIE

THE title of this article is a quotation from, of all places, a modern German military manual; and it condenses a very important truth, the ignorance of which has often brought disaster to the more rigid type of military mind. Supposing, just for a hypothetical example, that our commanders in Libya recently did in fact overlook that truth, putting all their faith in tanks and aircraft both for offence and defence, and declining to organise anything like the old-style system of infantry support with its concomitants of bayonet charges, entrenched positions and reserves?

There is no evidence that our Libyan commanders did make this mistake. But if they had, then it is easy to see why the 8th Army was rolled up so quickly. Once the tanks were beaten there was nothing left—save thousands of men in exposed positions without any plan for fighting on their own.

But it might be possible, with all care for accuracy, to say this. Our Libyan commanders did have bayonets, and fortified zones, and a certain system of reserves, *but* the suspicion does break through that they planned their campaign chiefly in terms of mobile, armoured fighting. It does appear that the infantry were the Cinderellas of the campaign, and that they were not given a complete chance to use their own, characteristic methods.

Anyway, the infantry made no impression on the battle till the tanks were almost finished and the New Zealanders came up to El Alamein. These fresh troops, and their South African and British supporters, met the headlong rush of the Germans and Italians with field-guns and with—bayonets. It was the method of the 1914-18 war—fresh infantry reserves brought forward with infantry weapons—that saved Egypt. And once those troops had stopped the enemy onrush, they began to dig themselves in, established a firm position that not only held the invaders for several days but provided a base for a successful counter-attack.

Without a doubt the history of warfare shows that great victories have been won by revolutions in technique. We finished the armoured knight at Crécy with our bowmen—but, wait a minute, we didn't finish him altogether. Armour was still a valuable part of equipment last century, and it is revived in the tank to-day, while cavalry is still being used on the Russian front. Then the mass-conscript armies of the French Revolution seemed to have disposed of the smaller professional armies for ever—until mechanisation brought back military élites and dictators revived "household regiments."

Possibly the tank is in for a long time. But it is in for a special purpose—the clearing of a passage—and there is no evidence yet to show that it can consolidate clearances on its own. The greatest danger facing people who are impressed by the successes of a new weapon in somebody else's hands is not that they might fail to learn the lesson and adopt that weapon themselves. It is that they might abandon all their old weapons and methods in the process.

As said, we have as yet not fallen right into that error ourselves. But, as also revealed, there are signs from recent campaigns that we may be tending that way. For instance, trenches. Thanks to the theory—it is no more—that the days of fixed positional warfare are over, some of our men to-day have not the faintest idea of how to dig and barricade a real trench of the 1914-18 variety. They can scratch out air-raid trenches, but some photographs from the battlefields have shown that they do not really know how to dig in. Now it is admitted that we do not want them to dig in if possible. But many occasions have arisen lately—in Malaya, Burma and Libya, even in France, 1940—when a capacity to do so quickly might have saved the situation.

Bayonet instruction is still given, and this weapon has shown its worth repeatedly in the modern war; but one cannot help noting that it is only given its chance as a kind of forlorn hope when everything else has failed—when it succeeds. The moral, surely, is that the weapon is far from obsolete and should be brought to the spearhead as frequently as possible, not just kept in reserve.

And, speaking of reserves, here is one more point. In the old positional warfare there was an automatic shuttle system of constant replacement of forward troops by reserves. This not only obviated the exhaustion which is such a feature of modern campaigns; it also gave everyone a chance to receive his baptism of fire and overcome the inhibitions which have sometimes proved so disastrous (e.g., under dive-bombing) in this war.

Granted again that you cannot have an automatic shuttle system of replacement by reserves when battle areas are fluid. But you can invent a new system or adapt the old one, as the Germans have apparently done. Such a new method might imply a jabbing kind of attack or defence, with fresh spearheads constantly coming up to replace the old.

Indeed, the wider question of *strategic* reserves, or large bodies of men, weapons and material kept in the rear for the purpose of holding the enemy if he breaks through, or of supporting a counter-attack, may also require investigation. We have frequently been told that General Ritchie was fighting in Libya with "all he had." According to the old style of warfare that would have been, officially at least, quite impossible, because according to that style an army was always in two parts, half in the front line and the other half in reserve often at the distant rear. If General Ritchie was really fighting with his entire force in the one combatant area, then surely he—or the new system to which he belonged—was taking a terrible risk. Anyway, the 8th Army had to retreat nearly to the Nile Valley before it could be reinforced, and then the replacements were largely from Palestine.

Strictures must not overlook difficulties and the special conditions of the desert war. Thus it is easy to speak of such matters as entrenchment in the face of the enemy, but another matter to dig the trenches if the ground, as in so many Libyan areas, consists of hard rock covered with only a few inches of sand. Often our men have had to blast holes in rock of that kind to make ordinary gun-pits.

Even the latest messages from the Russo-German front contain references to the large-scale use of horses for transport and mounted infantry. Both the Russians and the Germans are the most modern of military nations, yet they do not disdain to employ, side by side with tanks, parachutists and flame-throwers, other methods that first had military efficacy thousands of years ago. Why?

For the simple reason that there are still places on the battlefield, especially after a long artillery bombardment, where no kind of mechanical transport, however tractored, can proceed with supplies. A German commentator described the other day how even horses were useless on one battle-trodden sector, and the only way to get supplies to the forward troops was by the use of pack-mules. Evidently air-borne supply was impossible.

But there are other very good reasons why the most modern form of transport is not necessarily the best. Consider the question of fuel alone. No nation in this war, with the exception of the United States, can be happy about its fuel supplies; and if the *Wehrmacht* transported all its scores of divisions and all its vast material in lorries, it would soon have little petrol left. The same applies to rubber for tyres and to the vehicles themselves.

But, above all, the point is that in war you should be infinitely adaptable, so that your methods are always suited to the terrain and the type of battle. The Japanese in Burma used ponies for swift pursuits and manœuvring through the thick forests—through places that no broad Bren carrier could thread its way. We, however, were using Bren carriers. Thus we lost Burma. But we learnt a valuable lesson, that the newest is not necessarily the best in war, and we should profit from that next time.

A SPECIALIST WEAPON FOR SPECIALISED TASKS: A huge, long-barrelled naval gun, fresh from the factory, is transported to its destination by a special train on the L.N.E.R. system

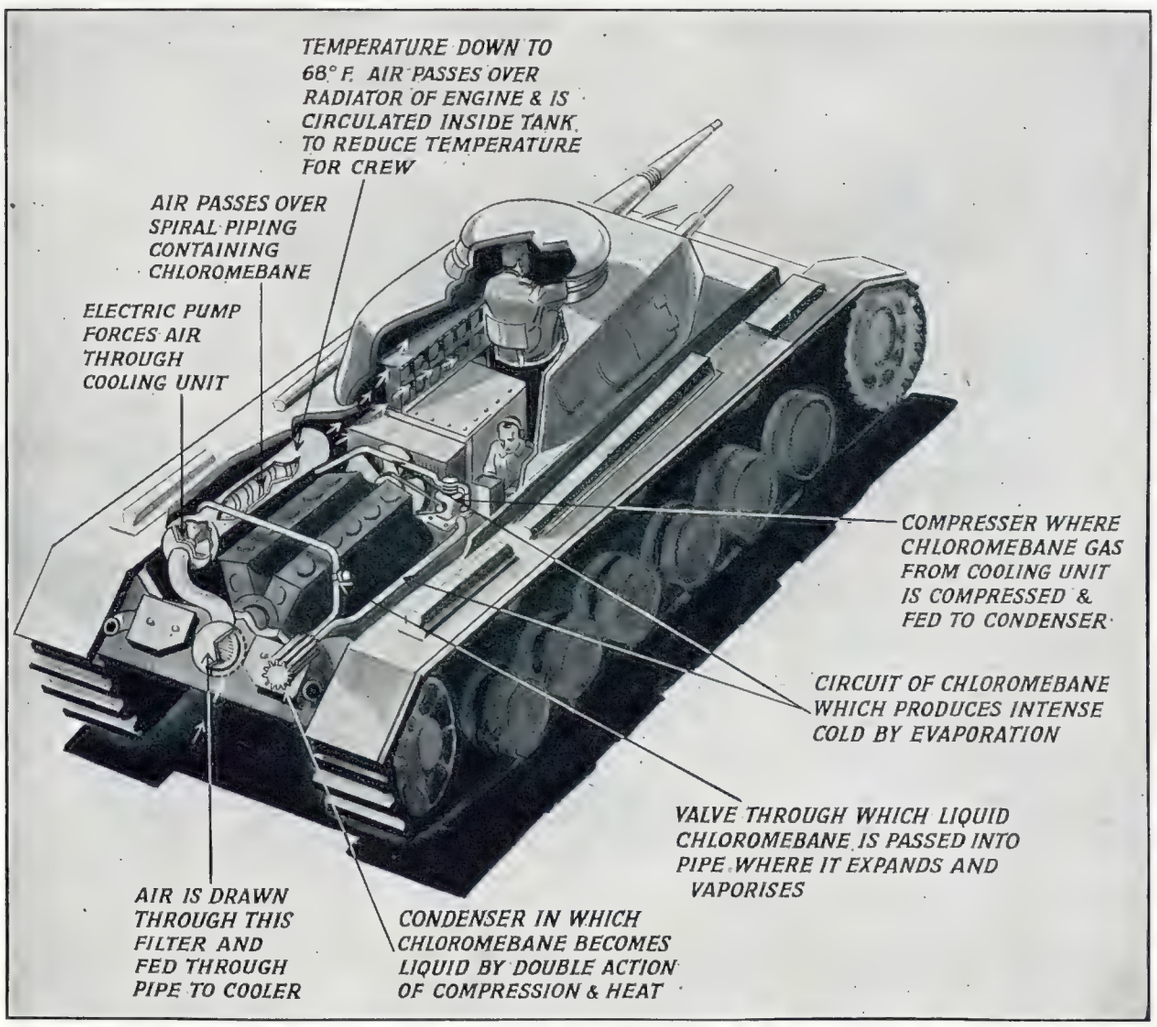
***On left*—A back view of the equipment worn by Sergeant Abell, showing how easily the bayonet can be drawn: *On right*—In the large right-hand pouch of the kit there is ample room for the six hand-grenades; the small-arms ammunition (to the total of 80 rounds) goes into the small pouches**

Sergeant Abell, who has invented a new guerilla fighting kit, is a former warrant officer of the Scots Guards who fought at Mons. His kit is intended to be of service to men who have to move rapidly whilst heavily armed. It can be slipped over the head in one movement and then clipped to the sides: the bayonet is carried at the back, and runs parallel to the equipment, so that it can be drawn with ease. So well balanced is the kit that six Mills grenades, six Tommy-gun magazines, gas-mask and cape, blankets, clothing, water-bottle, mess-tin, rations, bayonet and 80 rounds of ammunition can be carried without undue strain. Sergeant Abell is hoping that his invention will be adopted officially

SERGEANT G. ABELL, OF THE HOME GUARD, LAYS OUT HIS "GUERILLA KIT" to show the articles it will carry. These include six grenades, 80 rounds of small ammunition and six Tommy-gun magazines

THE USE OF THE STICKY BOMB BY OUR TROOPS IN THE EL ALAMEIN AREA: This handy weapon has been employed on several occasions when our infantry have been at close quarters with enemy tanks—*Drawing by E. Byatt*

One of the instances when the sticky bomb has been successfully used in the destruction of enemy tanks was an occasion last month when Rommel decided to try to dislodge our forces from Tel el Eisa Station and sent in half-a-dozen tanks for that purpose against the Australians. In the gathering darkness the attackers were spattered with sticky bombs, with the result that all six tanks were burned out or crippled. An Australian who took part in the operation later said: "There is no doubt about it. If infantry are armed with enough of these bombs and have good artillery and anti-tank gun support and keep their heads, they've got the Panzers guessing." The sticky bomb was first made known to the public during last year's fighting in Russia, when it was used against the German tanks with deadly results. Its shape is somewhat similar to the German orthodox hand-grenade, which, unlike our Mills bomb, is fitted with a handle. The withdrawal of the safety-pin sets the time-fuse and also causes an outer covering to fall away, exposing the inner surface which has been liberally daubed with rat lime, causing it to adhere securely on to any surface with which it comes into contact. There is an art in throwing these bombs, an under-arm lob being preferable to an over-arm throw, for should a bomb accidentally come into contact with the thrower's clothing, it would be impossible to remove it before the five-second fuse fired the charge



THIS IS HOW THE GERMANS CLAIM TO HAVE "REFRIGERATED" THEIR TANKS for fighting in the desert heat: A "Sphere" drawing based on details taken from the Nazi-controlled French newspaper "La Semaine." It has been stated, however, that the British authorities have no reason to believe that the enemy tanks are, in fact, cooled in the manner claimed here!

TANK FIGHTING in the DESERT BATTLES

And the "Refrigerator Tank" of the Afrika Korps in Egypt

For some time past statements have been in circulation that the German tanks used in the fighting in Libya and Egypt have been "refrigerated," or air-conditioned, in such fashion as to give the enemy crews a great advantage over the British tanks (for which no such claims have been made). The temperature within the latter during action has been given as 120 deg., whilst for the German vehicles the temperature has been only 80. Yet it has been authoritatively stated in London that there is no actual evidence in support of the enemy's claims.

According to reports from Vichy, Rommel has solved the problem of temperature in desert warfare by the application to his tanks of the special cooling system illustrated in the drawing on the left. According to the Nazi-controlled journal *La Semaine*, the refrigerator tank is kept at its low temperature through a system connected within the less exposed parts of the vehicle. Air is sucked in through a filter to cleanse it of sand; then it passes over spiral refrigerator piping, which brings the temperature down to only 60 deg. Fah. It would be possible to obtain even a lower temperature, so it is claimed, but such a considerable difference from the outside temperature would be dangerous for the tank crew. The cool air spreads inside the tanks, and the used air escapes through the opening in the door

HOW THE TANKS ARE FOUGHT

As Seen from the Vizor-Slot of a British "Matilda"

—Drawing by S. W. Clatworthy (Artist's Copyright in the U.S.A.)

¶ The main part of the above drawing shows the three chief ways of wrecking a tank by gunfire. This section of the drawing is enclosed in a "slot" to show the field of view seen by the Commander, gunner and driver through their visors, periscopes and sights. Inset, in the bottom right, are the gunner and his loader in the turret of the "Matilda." The Commander (not shown in the drawing) has also to be accommodated: he sits above, and behind, the gunner

The use of tanks in actual combat is so new that—in order to understand what is happening in Libya and in Russia in this style of warfare—we present this comprehensive diagram-drawing to show what goes on in the gunner's turret of a British "Matilda" during the heat of battle. The larger portion of the drawing shows the scene as it would appear through the gunner's visor. If he is faced with a number of enemy tanks, and the range is closing, the gunner has several choices, according to the nature of the ground, the light and the angle of fire of his gun. He has, in the main, a choice of three things: 1. He can aim at the base of the turret and knock this off completely (this has been frequently done, difficult as it may seem!). 2. He can aim at the track, attempting a sideways blow; if the enemy vehicle can be struck anywhere along the flank it will remain completely immobilised for the remainder of the action. 3. He may be able to catch an enemy tank as it turns and exposes the petrol-tank near the stern. A lucky shot here will set the tank ablaze.

In the bottom right the gunner's compartment is illustrated in detail: viewed from the outside, or from above through the hatch, the space within a tank looks so small that it might appear as if the gunner was in danger of being hit each time the gun recoils. That is not so. The gunner sits at the *side*, so that the recoiling weapon passes by at the right of his head. But he is in very close proximity, his right arm being looped over a shoulder-crutch which enables him to elevate or depress the gun-barrel; the refinements of fixed guns are, obviously, not possible here

THE AMERICAN ARMY IN BRITAIN

Some Notes on Details of the Uniform and Equipment of the U.S. Soldiers Now Serving Over Here

By PETER J. ROMFORD

THE American designation of its overseas units as "task forces" implies a logical approach to the job of equipping each contingent for the particular task it is intended to tackle. One may assume, consequently, that the equipment seen on members of the United States forces in this country represents the considered verdict of its commanders on what their men will need for the task in hand in Europe. They held a "watching brief," one must remember, during the first two and a quarter years of the war. They had military representatives with both sides who no doubt sent home candid comments, in the light of which the equipment for the new American Army was planned. Differences between the equipment of the U.S. and British forces therefore possess a certain piquant interest.

Differences there certainly are, from the crown of the cork-sprayed, basin-shaped steel helmet to the rubber soles of the 1942 doughboy's boots. There are differences, too, between the equipment of various divisions, for despite traditional hustle, the process of re-equipment is still in the transitional stage. Up to about a year ago, the standard U.S. Army rifle was the Springfield ·30-calibre bolt-action—a weapon broadly similar to that used by many Home Guard units.

This is now being replaced by the Garand rifle, known to the U.S. Army as the M1, and this is the weapon seen slung over the shoulders of the two infantrymen in the photograph.

The Garand has had rather a contentious passage before receiving the final approval of the U.S. Army Ordnance chiefs. Army equipment is debated by U.S. newspapers with ever greater freedom than our own, and the Garand came in for liberal criticism. It must now be presumed to have acquitted itself with distinction, and certainly this eight-shot, self ejecting, gas-operated rifle appears an excellent weapon. The calibre remains the same, ·30, and the cartridge is of the rimmed pattern, unlike the usual automatic, while the clip-ejection mechanism is said to be one of its best features. Like all automatics, it enables the marksman to "keep his eye on the ball," free from the distractions of loading, and for this reason alone the Garand should materially improve the marksmanship of any force issued with it.

THE PUDDING-SHAPED STEEL HELMET AND THE ODDLY-SHAPED GAS-MASKS: Two features of U.S. equipment which have aroused interest amongst English people. The American soldiers in this picture are Private M. A. Giordano, of Nutley, New Jersey, and Private John Ziaja, of Adams, Massachusetts

The next most obvious difference of equipment is the gas-mask, carried in that peculiarly bulky and shapeless haversack—to British eyes more like a postman's letter-bag than anything else. The difference here is more apparent than real. The U.S. mask differs from ours mainly in having a longer breathing-tube and an external metal exhaling valve. The eyepieces are also larger, and the gas-purification canister has a peculiar rounded end, but these differences are solely of design rather than function. The steel helmet shown is also quite a new introduction—our own type was standard up till recently. Americans claim that the present pattern gives much better protection to the nape of the neck and the eyes—both vulnerable points—sits more lightly on the head and is less conspicuous both from the air and the ground. It also has the extremely practical advantage that the sharp-edged brim of our pattern—a frequent cause of minor injuries—is eliminated.

The standard uniform is still much what it was in 1916, blouse and pants of "OD" (olive drab) with broad webbing belts and gaiters but with fewer pockets than ours. The cut is now much fuller and freer, while the broad-brimmed, cowboy-reminiscent felt hat of 1916 has been replaced by a forage-cap much like our own, except for a characteristic hump at each end. The actual battle-dress of some of the units seen over here consists of blouse and trousers of material more nearly khaki in colour than the official O.D., with lumberjack-type trousers caught up at the knee either by webbing gaiters or "brogans." Over the blouse is frequently worn a waterproof windjammer or "slicker," with zip-fastened front. Here again equipment varies not only with the different units partly because of the transition process referred to, but because of the rather lavish kit supplied to the U.S. soldier, and reputed to contain no fewer than six different working rigs, from the O.D. "walking-out" dress down to the fatigue outfit of denim overalls and white hats of something like deerstalker outline.

The "walking-out" dress of commissioned ranks is now familiar to thousands of people in Britain. For action, the olive-drab jacket and natty Teddy-bear trousers are replaced for all officers by clothes and helmet practically indistinguishable from that of the ordinary soldier—a practice in which the U.S. Army is in agreement with practically all the major Powers now at war. The officer's personal weapon has up to now been a ·45-calibre automatic, but this is just being replaced by a new Winchester carbine—a rifle to all outside appearances no larger or heavier than a youth's rook rifle, but reputedly a weapon of great range and hitting power. As one would naturally expect, the U.S. Army has adopted the theory of mechanised fire power wholeheartedly. At the same time, it is not giving too many secrets away. Many details have been released as to the equipment of an American armoured division, for example. We know that its total personnel is about 11,700, and of these less than 2,000 are riflemen—but we do not yet know whether Garand riflemen or not, and this would make a big difference to their fire power. The number of riflemen is in any case dwarfed by the other weapons, for in such a division there are over 2,000 ·45-calibre sub-machine-guns, over 3,500 ·30-calibre machine-guns, 850 ·50-calibre machine-guns and nearly 10,000 ·45-calibre automatic pistols. This last figure implies that practically every man in such a division has a ·45 automatic as a second personal weapon of defence.

The commissariat side of the U.S. Army has been similarly thoroughly handled. There are at least eleven types of "iron ration" in common use, based on the theory that modern war is a war of individuals in which a man or small group of men may be operating behind the enemy's lines or otherwise isolated for days on end. For this reason, a whole series of emergency rations replacing the traditional beans and "goldfish" (salmon) of 1917 has been prepared. Type C is the basic ration, and consists of one can of meat and beans, one can of meat and vegetable hash, five hard-tack biscuits, four pieces of hard toffee, coffee and sugar. Most soldiers carry this ration, calculated to give 3,250 calories—enough for a day's hard fighting.

Ration D is an extra emergency ration, consisting of three tablets, mainly of a chocolate character, but reinforced with sugar, oat-flour, milk and Vitamin B. Most elaborate is the breakfast unit (Ration K), offering veal and pork loaf, biscuits, coffee, sugar, chewing-gum and malted-milk tablets. A neat coffee-heating unit is also supplied attached to a small can, and given seven minutes' heat from three tiny pellets. So well catered for in this vital direction, the morale and battle spirit of the 1942 doughboy should be well up to the level of Delville Wood and Château Thierry.

THE AMERICAN "JEEP" with which Londoners are now becoming familiar. These distinctive little conveyances carry a specialised equipment, much of which seems novel. Considerable numbers of these vehicles are now finding their way through the narrow London streets

A GERMAN RAIDER BY NIGHT IS BROUGHT DOWN OVER THE EDGE OF THE SEA, and comes hurtling out of the clouds like a blazing torch after its interception by night fighters of the R.A.F., ever on the watch for such sneaking interlopers

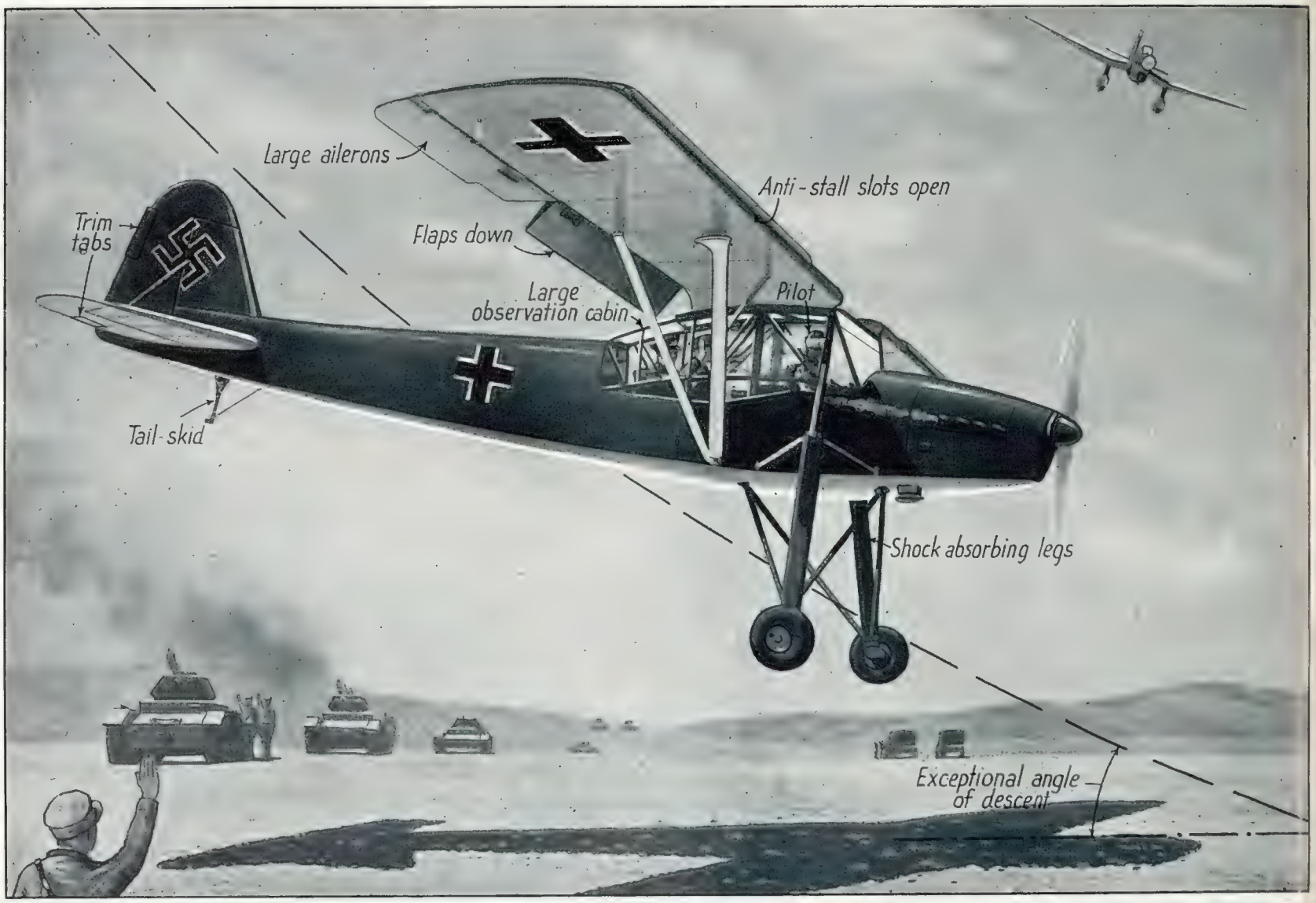
BY DAY A BOMBER PATROL SETS OUT FOR ENEMY WATERS: Beaufort Torpedo-droppers winging out to attack German shipping in the Channel—a task in which Coastal Command of the R.A.F. has specialised for many months past, with great success

DAY and NIGHT ALONG the SOUTH COAST

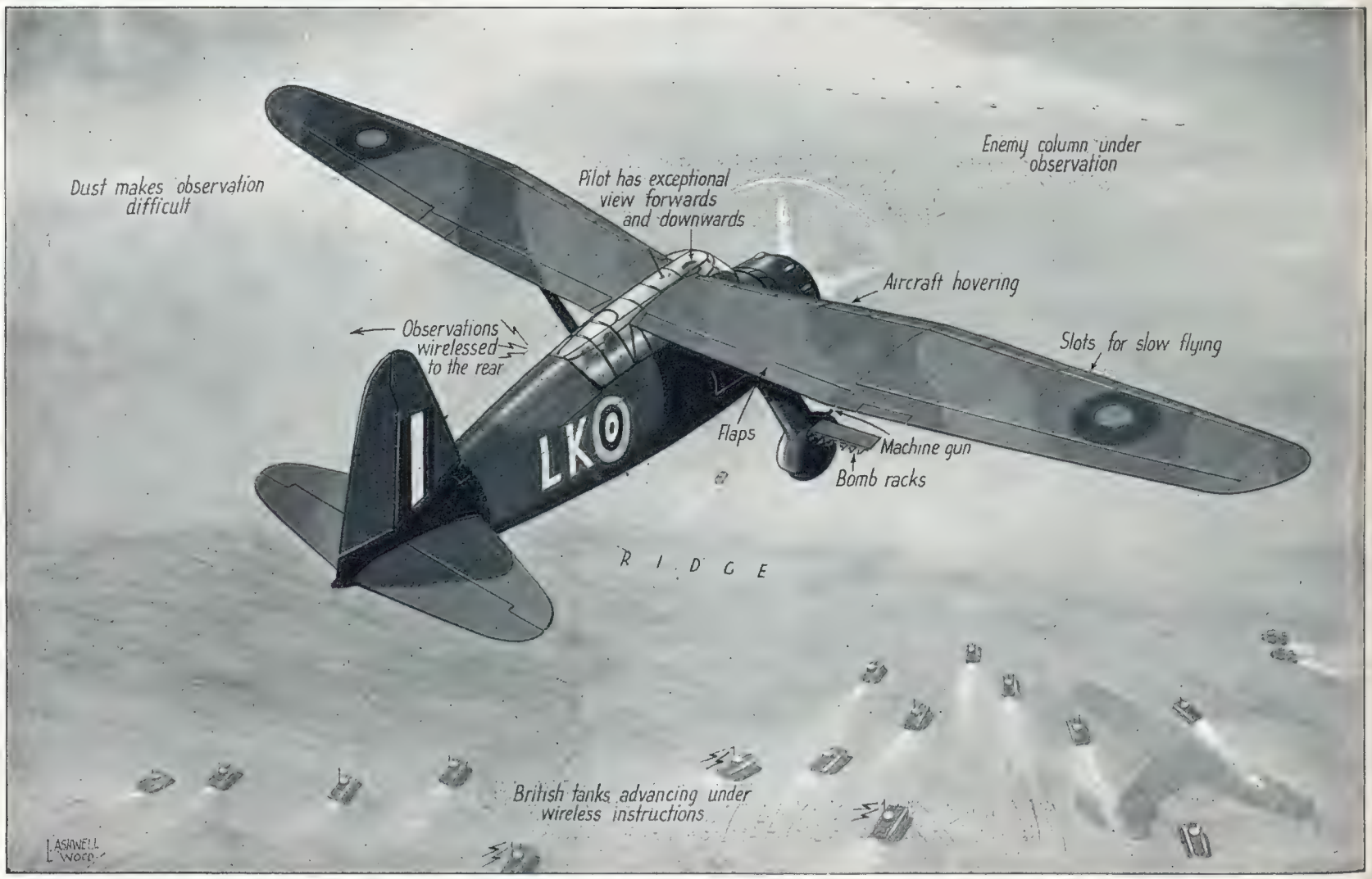
—Two Impressions by Montague Dawson of Typical Scenes of Activity by the R.A.F.

The two pictures reproduced here are the work of a *Sphere* artist whose home is on the English Channel, from which point of vantage he has witnessed many scenes of the war in the air. By day and by night the R.A.F. are in action—intercepting the bombers, laying mines in enemy waters, bombing factories, towns, and shipyards in the Occupied territory and Germany, and carrying out other duties. Although Londoners may rarely see or hear a British aircraft these days, the dwellers on the coasts of Britain are always witnessing scenes such as those above

STORK AND LYSANDER IN LIBYA—Special "Sphere" Drawings



THE FIESELER-STORCH (OR "GRASSHOPPER") AEROPLANE USED BY GERMAN STAFF OFFICERS IN LIBYA: The destruction of one of these in the desert the other day caused a good deal of speculation amongst the R.A.F.! (see notes at right)—*Drawing by L. Ashwell Wood*



THE BRITISH EQUIVALENT OF THE STORCH—THE WESTLAND LYSANDER, an Army Co-operation aircraft which has done yeoman service in Libya in spotting enemy movements and troop concentrations (see notes at right)—*Drawing by L. Ashwell Wood*

A NEW IDEA FOR A TANK-CARRYING PLANE FROM THE UNITED STATES: An imaginary conception of a huge, four-engined aircraft capable of carrying a full-sized tank. The plane simply bristles with guns—above, below and at the sides! (see notes below)—*Drawing by Roland Davies*

Stork and Lysander (*see opposite page*): During recent weeks considerable attention has been drawn to the German Fieseler-Storch aircraft—mainly because this type is used for the conveyance of high-ranking enemy officers from point to point of the desert battlefield in Libya, and because one of them was shot down and destroyed just as it was taking off behind the enemy's lines! Rommel uses a Storch himself, cruising about until he receives a Very-light signal from the ground, when he alights at the exact spot where his presence is required.

The upper picture on the facing page shows the general appearance of the Storch and its main features. This aircraft has developed out of a machine originally planned for the designer's own aerobatic performances: it is to-day a fully-slotted and fully-flapped monoplane used for Army Co-operation and military liaison duties.

The Storch is noted for its remarkable slow-flying qualities (it can still be kept in the air at 32 m.p.h.), and for the excellence of its view as an artillery spotter and liaison aircraft. By means of its slots and flaps it can operate within very confined spaces—it requires only a level patch of some 50 to 60 yards in length for its take-off, and it can land almost on a cricket pitch. Its rate of climb is very considerable for this type of aircraft, being 3,250 ft. in only four minutes. But its speed is not high: this is 108 m.p.h. as a maximum. The Germans were using these machines as far back as 1938, the Handley-Page slots being a British invention.

The British counterpart of the German Storch is the Westland Lysander, but the latter is altogether a much superior type and with a far better performance and endurance: its principal characteristics are indicated in the drawing on the left. The Lysander has done yeoman service in Libya in a variety of ways. It is a high-winged, strut-braced monoplane, with exceptional view for the pilot. Like the Storch, aided by slots and flaps it has extraordinary slow-flying qualities, enabling it almost to "hover" over the target: yet, at the same time, it has a good turn of speed (230 m.p.h.) to get away should enemy fighters appear.

***Above and on left*—TWO PICTURES OF THE TANK-CARRYING AIRCRAFT projected by a U.S. plane designer, Vincent Burnelli**

The large drawing at the top of this page and the two photographs above and on the left illustrate an idea outlined by Mr. Vincent Burnelli, a noted U.S. aircraft manufacturer. This idea envisages the use of huge, four-motored aeroplanes capable of carrying tanks up to the battlefront and dropping them *at landing speeds* for rapid action against the enemy just where they are needed most. The drawing at the top of the page shows a large tank housed in the centre section of the plane, ready for landing once the tank-carrier has come to the standstill on the aerodrome. In the upper photograph, however, *two* tanks are shown—of a lighter type. These, it is suggested, could be used in place of landing-gear! The tanks are lowered much as are the retractable wheels of a big bomber, with the tank treads speeded up to landing speed; as they touch the ground the tanks are released and make off under their own power at a high speed! The plane then returns to its base

CARRYING TANKS BY AIR!

A New Idea from the United States

GERMANY'S NAVAL STRONGHOLDS in NORWAY

And the Fortifications all Along the Occupied Coast Which She has Now been Forced to Construct

IT was in December of last year that Hitler first became really alive to the extreme danger of the long coastline which he has to hold: alarmed by the successful raids by the Allies on the Norwegian coast, he was impelled to reassure the German people that the "West Front," as he called it, would be strengthened. Ever since the beginning of this year he has been busy fulfilling that promise, and tremendous activity has been evident all along the incredibly cut-up coast of Norway.

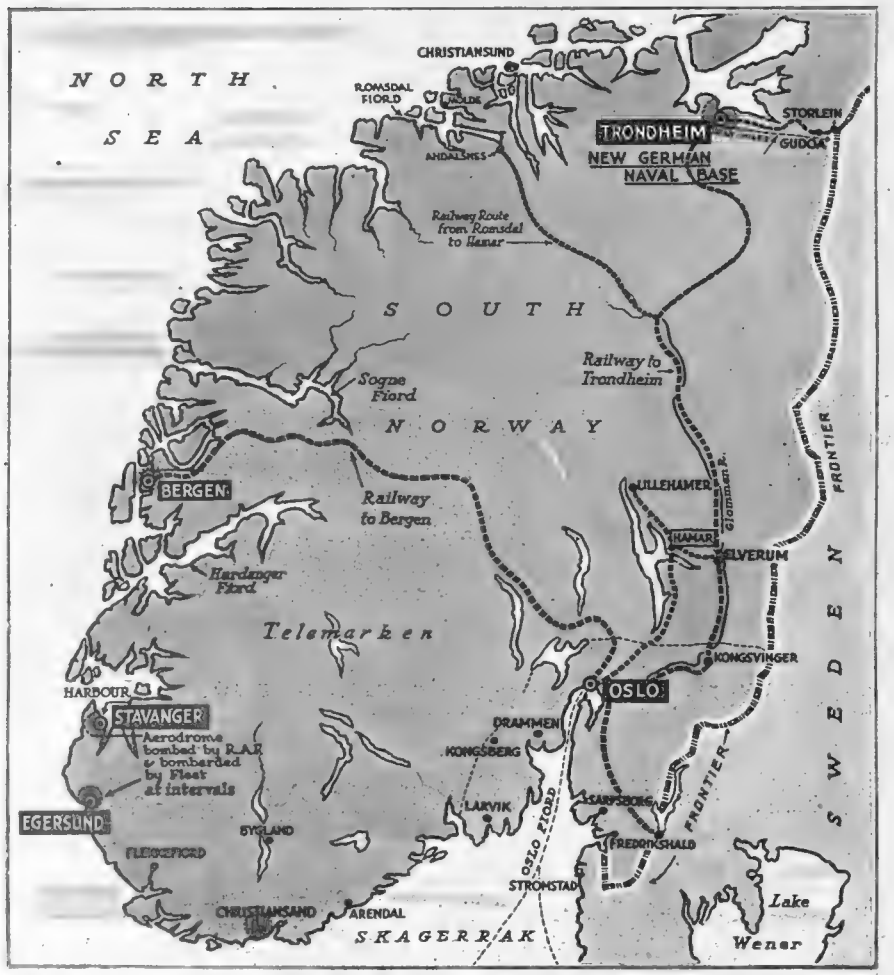
Germany used to make complaint that she suffered from a poor approach to the open sea, without apparently realising what real safety the shortness of her North Sea coast gave her against a superior naval Power: the captain of the *Gneisenau*, for instance, stated in a report that "no other great people in the world has been so badly treated as regards coastal approaches. . . . Germany has only got this one hole at the mouth of the Elbe and the Weser to creep in and out of." But now that they control all the ports along the Norwegian coast, as well as the whole coast of Holland, Belgium and France, the Germans are beginning to realise that there are responsibilities and anxieties, as well as advantages, in such a position!

A great sense of nervous tension has of late been observed all along the Occupied Coast, with tremendous energy at all the chief ports. More and more boats have been commandeered from Norwegian shipowners for patrol work to observe any British or American approach: wholesale evacuation of residents near the ports has taken place, and as spring approached the whole coast was cleared—in some places, only twenty-four hours' notice being given. Plans were also made to remove civilians to the Eastern frontier, as far from the coast as possible.

General Falkenhorst, Commander-in-Chief of the Germans in Norway, made a special tour, looking for the places most likely to attract the attention of the British for invasion purposes. Mines were thickly strewn in all the fiords, and the long "Falkenhorst Line," from Trondheim, in the north, to Mandel, in the south, strengthened. Thousands of foreign workers from as far away as Rumania have been sent to hurry on the work. Barbed wire and concrete strong-points have made the coast of Norway very formidable for any attack; and yet the Germans are still nervous! General List, who had been recalled from the Ukraine at the end of 1941 owing to his failure there, has been sent to Norway to further the coastal defence.

Trondheim has been converted into a tremendous naval base, harbouring the largest U-boats, cruisers and destroyers, and it is now protected by a great military camp. The *Tirpitz*, the only true battleship now remaining to Germany, was stationed there for some time, together with the *Prinz Eugen* and the *Admiral von Scheer*, in order to carry out attacks on the British convoys to Russia. Trondheim is greatly valued as being far north of the British controlled narrow-waters, and because it allows of free access to the Atlantic; but at the same time there is evident anxiety over possible invasion and, consequently, nothing is being left to chance by the Germans. The whole district round the port and the neighbouring country has been fortified. Two air raids on Trondheim by the R.A.F. last April were so severe that the explosions were heard as far away as the Swedish frontier.

WHERE THE "TIRPITZ" WAS TORPEDOED: The Barents Sea, where Soviet submarines have been operating against German warships, is bounded by Spitzbergen, Franz Josef Land and Nova Zembla. A new area has been coming into the war news during the past few weeks—that of the Barents Sea, a large area lying off the north coast of Norway and bounded on the west by the Spitzbergen group of islands, on the north by barren Franz Josef Land, and on the east by the equally barren Nova Zembla. It was within this area that the German battleship *Tirpitz* was torpedoed by a Russian submarine. The Barents Sea gained its name from the Dutch navigator William Barents, or Barentz, who piloted several expeditions in search of the North-East passage and who died off Nova Zembla on June 20, 1597. His winter quarters were discovered in an undisturbed condition 274 years later by Captain Carlsen when he visited Nova Zembla in the year 1871. Part of Barents' journal was recovered four years later by another explorer



THE NEW NAVAL BASE CREATED BY THE GERMANS AT TRONDHEIM whence units of the German Navy can issue out to attack shipping in the North Atlantic, as well as British and American convoys to Murmansk

During the spring the Nazis seemed to expect an imminent invasion. At Stavanger, during May, the troops were kept ready for immediate action, as the sandy coast of southern Norway was considered an area most possible for use by invasion barges. Bergen, Hammerfert and Narvik are also heavily mined and defended. Tromso, in the extreme north of Norway, has been converted into a naval base suitable for destroyers and U-boats, which are thus placed in an advantageous position for attack upon convoys as they pass the dangerous northern point of Norway. Tromso is considered to be particularly secure from attack, as the approaches through the islands which surround it are very narrow, and consequently easy to defend.

During the almost perpetual daylight of the Arctic summer, Allied convoys have an even more dangerous journey than during the winter storms, for the ice-floes drive them closer to the coast, where the *Luftwaffe* have many aerodromes from which to attack.

But Spitzbergen is only habitable in the summer; the miners who work there from June to September leave it when the winter begins to freeze up the fiords. The Nazis claim to have sunk a large proportion of the ships carrying the valuable cargoes of tanks, munitions and planes to Russia: though, doubtless, these reports are exaggerated, there have been a great number lost on the perilous voyage. Yet, in spite of all that enemy submarines and aircraft can do, a ceaseless procession of American and British ships still manage to deliver their goods safely in Russia.

It is not only the Allies who suffer losses, however: many enemy ships, too, have been destroyed or damaged. Apart from merchantmen and lesser naval craft, on July 17 a Russian submarine claimed to have torpedoed the *Tirpitz* in the Barents Sea.

The Allies have not yet made any serious attempt at an invasion of Norway; but the mere fear of such an action has caused Germany much perturbation, and has forced her to divert workers for the new coastal defences, and to send more troops to Norway—in fact, to create a "Second Front" in anticipation!

Below—**H.M.S. "KENYA" WITHIN THE ARCTIC CIRCLE:** This is an 8,000-ton cruiser of the Fiji class, which was completed as recently as 1940: she is 549 ft. in length and is armed with twelve 6-in. guns, eight 4-in. anti-aircraft guns, and sixteen smaller weapons. She carries three aircraft aboard, and a catapult for their launching. Her speed is 33 knots

THE GERMAN BATTLESHIP "TIRPITZ" LIMPS HOME AFTER HAVING BEEN TORPEDOED BY A SOVIET SUBMARINE in the Barents Sea. The battleship had a strong escort of eleven warships, as well as aircraft, as she crawled southwards towards Trondheim at reduced speed—*Drawing by Wm. McDowell*

The *Tirpitz* was only completed in the year 1941 : she is a battleship of 40,000 tons, armed with eight 15-in. guns, and with a complement of 1,500. She was discovered, as she emerged from the Norwegian fiords into the Barents Sea, by a Soviet submarine which launched a torpedo at the battleship. Later, Soviet reconnaissance planes discovered the *Tirpitz* steaming along the Norwegian coast southwards in the direction of the great German naval base at Trondheim. The battleship was escorted by no fewer than eleven other German warships, including the two pocket-battleships *Admiral Scheer* and *Lutzow*, a heavy cruiser, the *Admiral Hipper*, and eight destroyers. In this picture by Mr. McDowell, the vessel on the left is a Nazi destroyer keeping as close as safety allows and ready to take off the crew of the battleship should the torpedo damage suddenly extend. It is possible that a main bulkhead may have been damaged, in which case a flooded compartment may put extra pressure on another bulkhead which might collapse and so fill the hull to danger point

MORE CANADIAN CORVETTES FOR THE BATTLE OF THE ATLANTIC : Five of the steady stream of Canadian-built corvettes steam out to sea for their final tests before passing into service

***On right*—THE R.A.F. ATTACK A NAZI CONVOY IN NORWEGIAN WATERS on the way to the new naval base at Trondheim**—*Drawing by Wm. McDowell*

The R.A.F. have recently paid much attention to the new German naval base at Trondheim and to the lines of communication between that port and North Germany. The work of converting Trondheim into a base for attack on the Allied supply line to Russia, and for the use of ocean-going U-boats, calls for big supplies. Four ships of a convoy believed to be engaged on this task were recently set on fire after an attack by the R.A.F. and other vessels were probably hit. Aircraft of the Royal Netherlands Naval Air Service took part in this operation : the Dutch commanding officer ignored a balloon flying from the ship he selected and went in at mast height. The pilot dived from the windward side, thus taking the slight advantage given by the bight of the balloon cable, and his bombs hit the ship and fifes broke out a few moments later

MADAME CHIANG KAI-SHEK, wife of the Generalissimo, at a tea-party in Chungking in her honour, after her return from India, demonstrates a spinning-wheel presented to her by Gandhi

LIFE IN CHUNGKING
—CAPITAL OF NATIONALIST CHINA

A First-hand Narrative of How the City Stands Up to the Terrific Air Raids by the Japs

By DAVID CROOK

WITHIN an hour of reaching Chungking, I saw something which symbolised the spirit of fighting China.

A group of coolies were setting up a new building in the middle of a burnt-out lot, devastated by high-explosives and incendiaries. On the edge of the ruined space faint and dying wisps of smoke continued to hover above the still-hot wreckage. Phœnix-like, new life was emerging from the ashes.

Such a people as this, I thought, will take a lot of beating.

Chungking to-day, despite solid blocks of buildings bombed to bits, is more thriving, more prosperous, more go-ahead than ever before. The streets throb with life. Along great stretches of razed areas, extending as far as from Oxford Circus to Piccadilly, rows of new shops spring up mushroom-like amid the debris. Most of the structures are one or two storeys high, made of lath and plaster—a woven, fibrous framework attached to stout bamboo poles holding up the heavy plaster coating. Some have an imposing, modernistic façade, elegant if impermanent. Whole blocks of these buildings spring up in, seemingly, no time at all. They are actually open for business within a week of the start of construction. Until completion of his new building, the shopkeeper displays his goods on a stall, in a booth or on the ground itself. Busy shopping streets resemble a mixture of Oxford Street and Hampstead Heath on a bank holiday. I have walked past rows of bustling shops of which it might be said the stock is the stock of Bond Street but the stalls are the stalls of Petticoat Lane.

The goods on sale are a curious mixture of East and West: quilted bed-covers padded with cotton or silk waste; electric torches; age-old Chinese remedies—monkeys' paws, antlers, ginseng, alongside modern Western medicines; American coffee, which is beyond the pocket as well as the palate of most; little cloth bags to hold small valuables and iron rations during the long hours spent in air-raid shelters; above all, the eternal thermos flask. None but the most foreignised Chinese indulge in cold drinks—even rice-wine is warmed!—and a thermos flask in the home or on the road is a possession of all but those who lack the price. Some of the articles are manufactured locally in the new light industrial base which China has been building up around Chungking, Kunming and other interior cities. Many used to come from Shanghai and Hong Kong, smuggled with typical Chinese ingenuity through the Japanese lines.

GIRL STUDENTS OF LINGKIANG COLLEGE, who moved with their Institute from Shanghai to Chungking (a distance of 1,200 miles), build their own campus with pick and shovel. They also built a road, smoothed off athletic fields, and cultivated gardens

Business is not the only thing that thrives. Despite the trials of war, cultural life in Chungking is richer than it ever was before. This is largely due to the immense influx of progressive, modernised Chinese from the advanced coastal and Lower Yangtze regions. There has been a veritable invasion of this feudal inland city—as if half the population of London had suddenly descended on the Hebrides and started things moving really fast. Not all the local inhabitants of Szechuen, the province in which Chungking is situated, are delighted. They have been woken from a sleep into which they fell a thousand years ago—and sometimes seem to have got out of bed on the wrong side. Regional feeling in China is strengthened by variations in dialect and has been artificially heightened by a now-dying feudal war-lord tradition. Not ten years ago civil wars were as common in Szechuen as Parliamentary debates in Westminster—and they were often rather more heated. But the locomotive of history will not be stopped, and it is bringing national unity with it. Regional difficulties are steadily being ironed out, with a mixture of tact, bargaining and politico-military manœuvring. The Central Government is coming out on top.

THE CITY OF CHUNGKING UNDER BOMBARDMENT, as seen from across the Yangtze River during a recent attack by Japanese bombing planes

The highly-seasonal nature of the Chungking raids is, of course, related to the city's pitiful lack of defence. Its most effective anti-aircraft weapons are the clouds, and to counter-balance even this one good deed nature also supplies the treacherous moon, whom the Chinese term not Queen of the Night but Public Enemy Number One.

Perhaps as a result of her very defencelessness Chungking has developed a magnificent A.R.P. system; there are deep shelters for practically all of the city's 500,000 population. However great the damage to property may be, loss of life is negligible and is generally due to carelessness, stupidity or to the unavoidable risks run by civilian defence workers in discharge of their duty. This is a point worth noting by those who think of the Chinese as a "backward" people without capacity for organisation.

The city, built as it is on rocky hills, certainly lends itself to tunnel-shelters, a large proportion of which can withstand direct hits. With the assistance of observers and wireless posts close to, if not behind the Japanese lines, warning of raids is given about an hour ahead of time. Sirens sound, warning balloons, visible all over the city, are hoisted on high posts, the whole thing goes off according to an almost dull routine.

I remember being at a Government office once when the alarm was sounded. Coolies came in and carted off to a shelter the heavy

PETER BURCHETT, A LONDON NEWSPAPER CORRESPONDENT, with his *hwaggan* (two-man bamboo litter described in the article). This picture was taken as he set off for one of the fighting fronts, with haversack on shoulder and typewriter in hand

typewriters and other valuables; documents were gathered together and at the second warning everyone—ministers, generals, stenographers (who seemed to manage to retain the Chinese woman's dainty charm in spite of constant air raids)—all filed unconcernedly to the entrance of the shelter. There they waited, discussing Government business, war news, family affairs, the price of rice—an eternal topic—until the urgent signal, upon which all streamed inside. The shelter was roofed by 20 to 30 ft. of solid rock, was electrically lit, had seats ranged along—or rather, cut into—its zigzag walls, and if it lacked all the comforts of home was at least adequate for its purpose. This particular raid lasted four hours, with occasional reversions to the second alarm, or less-urgent stage. On these occasions some people would go out for a breather, and perhaps to buy some peanuts or Szechuen oranges from street pedlars and, as with such crowds everywhere, there was much speculation as to just where the bombs had dropped.

Some people head for the country on hearing the alarm, rickshaw and *hwaggan*—a two-man bamboo litter—being the commonest means of conveyance. Cars are few and decidedly "official." Pullers and carriers make hay while the air-raid sun shines, raising rapidly their prices, which are normally arranged by a long-drawn-out bargaining process. (The rickshaw-pullers, incidentally, have a terrifying habit of coasting gaily down the steep Chungking hills, swinging nonchalantly on their vehicle's shafts, their feet touching the ground only every 10 or 15 ft. in giant hops. A ride in a Chungking rickshaw is far more exciting than one on any switchback.) One can scarcely blame the pullers for charging all the traffic will bear on these exceptional occasions, for theirs is a dog's life most of the time.

THE NEW GENERATION IN CHINA: A young recruit to a Chinese Military Academy

For a long while the south bank of the Yangtze, with its ranges of receding hills, was considered a "safety zone," for most of the foreign property and embassies are situated there. When the alarm was on the Yangtze ferrymen did a roaring trade taking passengers to this refuge. Now that we are all in the same anti-Japanese boat there is little to choose between the two river-banks.

After a raid the city snaps back to normal as smartly as a piece of elastic. Whatever damage to property may occur, loss of life is negligible, and nothing vitally impeding China's conduct of the war is ever achieved. Major Government offices, the new industrial plants, educational institutions—all have long been evacuated and are scattered and concealed in the surrounding countryside. Even the shopkeepers protect themselves by storing the bulk of their stock in the country and keeping in the city just enough for one day's business. For large orders they show samples and arrange for later delivery. This may cost time, but it beats the bombs.

Chungking is no perfect city. She has her Fifth Column and her Black Market. Prices on an average are thirty to forty times their pre-war level, partly through unavoidable wartime difficulties but partly because of hoarding, speculation and profiteering.

HOW CHUNGKING IS WARNED OF AN IMMINENT ATTACK BY AIR: Warning signals are hoisted in a prominent position as soon as the raiders are signalled. The picture also shows the hilly nature of the ground on which the city is built, which permits of the construction of dug-outs on the lines indicated below—*Drawing by W. G. Whitaker*

CHUNGKING IS BUILT ON A SERIES OF HILLS: The air-raid shelters are dug direct into the rock, in the same manner that galleries are constructed in a coal-mine. These shelters are 20 to 30 ft. down, and are lined with seats along the walls. Civilian population and military personnel alike take shelter during raids, and work is continued whilst the air attacks are actually in progress—*Drawing by E. G. Lambert*

HOW TRADE IS CARRIED ON IN THE MAIN STREETS OF DEVASTATED CHUNGKING: With most of its big buildings gone, Chungking still carries on: rows of new shops, with living quarters above, spring up mushroom-like amid the debris. Until completion of his new building, the shopkeeper displays his goods in open booths—*Drawing by E. G. Lambert*

THE WAY OF THE INVENTOR IN WARTIME

An Analysis of the Process whereby New Ideas to Help the War Effort are Weeded Out; with a List of Some of the Less Useful Ones Submitted During Recent Months to Various Government Departments

By CHARLES GRAVES

THE question in the House of Commons about the Sten gun, carrying with it the suggested corollary that inventors have the utmost difficulty in placing their ideas in front of the correct and most sympathetic Government Department, has aroused a good deal of anxiety in the country. The general impression left is that selfish, jealous, blimpish officials look gift horses in the mouth, are sceptical about any ideas which are offered to them for the successful prosecution of the war, and show neither enterprise nor interest in any device which they themselves have failed to initiate.

I am assured that this is not the case. The question of good faith is guaranteed by the incorruptibility of the Civil Service, the point being that the officials who go into the question of outside suggestions are permanent Civil Servants and/or pure scientists. So there is no question of jealousy.

If an idea is patented, the Patent law is followed on the normal royalty basis. Where no patent has been taken out, the Government proceeds on the principle enunciated by the Royal Commission on Awards which was established after the last war. A similar Royal Commission will be set up after this campaign is over.

On paper, there are eight different ways in which inventions (or, rather, suggestions or proposals) reach their mark—the mark being the Directorate of Research Development. Details are either sent by letter direct to the Ministry of Supply; or by interviews with inventors who call at the Ministry of Supply to explain their proposals; or by suggestions of members of H.M. Forces forwarded through Service channels and frequently resulting from the inventor's appreciation, due to his service, of a requirement not yet met by existing equipment, or of an improvement which can be made in existing equipment. Those are the first three. The remaining five are:

(1) By co-operation with the Patent Office.
(2) By co-operation with the corresponding Department in the Admiralty and Ministry of Aircraft Production.
(3) By co-operation with technical bodies established in this country by the Governments of German-occupied territories and temporarily resident here.
(4) By the Inventions Board established by the British Purchasing Commission and the Inventions Departments of Dominions.
(5) By military and naval attachés in foreign countries.

On investigation, I find that the simplest thing to do is to write, through the Ministry of Supply, to the Controller of Physical Research, sending any blue-prints available. Or again, the inventor can telephone Welbeck 6677, in which event his call will be taken by S.R.4. This stands for Scientific Research Department Number 4, whose function it is to deal with suggestions and proposals.

If the inventor's idea is to put wings on tanks, or something equally futile, he will be discouraged promptly. After all, time is money at the Ministry of Supply as anywhere else. If the inventor knows his subject, he will be invited round to the appropriate Department within two or three days. Here he will see a Civil Servant with possibly the widest knowledge—in a general way—of inventions to be found in this country. This Civil Servant, who shall be nameless, will tell the inventor that a collapsible periscope, for example, is not feasible for various reasons. If the inventor has a really good idea it will be passed to the appropriate Service Department, and it is by no means impossible that he would hear no more of it until the war is over. Supposing the inventor had an idea for a really effective amphibious tank. It would be far too dangerous to allow him, however apparently discreet, to know that the idea had merits.

At this point I may say that hundreds of people, when the war is over, will make claims. Dozens will receive payment. To several there will be a delightful surprise payment for an invention of theirs which was too brilliant to risk discovery. On the other hand, the people who made the following suggestions need not expect any reward:

A proposal that a North and South Pole should be set up to upset the compasses of enemy aircraft.

Proposal to spread birdlime over enemy aerodromes, and upon ground over which the enemy is likely to attempt an advance.

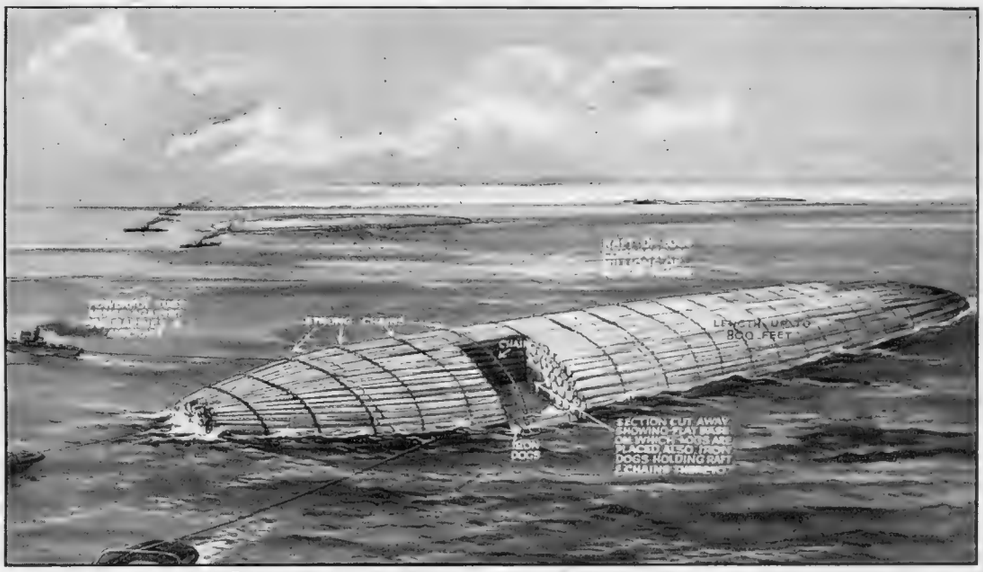
Proposal to have a bayonet fixed to the right foot for dealing with invading paratroops at close quarters

Proposal to clear minefields by sending sea lions overboard from a ship. The proposer said that by firing a shot the sea lions could be induced to go in the right direction. He even gave particulars as to where supplies of sea lions could be obtained.

Proposal to wrap incendiary leaves around the bodies of rats, and to fit the rats with muzzles containing a small bag of gunpowder and matchsticks. The heads of the matches were to be gnawed by the rat and, in the proposer's words, "ignite the works." The idea was to set the rats loose in enemy docks so that they would get aboard the ships.

A dissertation on the subject of flower coloration with particular reference to chrysanthemums.

Dropping sticky treacle on to windscreens of enemy transport—by aeroplane. Writer suggests that sugar should be spared for this, as we have ample supplies of beet sugar in this country.



AN "INVENTION" TO OVERCOME THE SHIPPING SHORTAGE: A raft of cigar shape and composed of much-needed timber for Britain, being towed across the Atlantic by powerful tugs—*Drawing by E. G. Lambert*

In the ordinary way, timber for this country (and a good deal of it is needed for the construction of camps and houses, and other purposes) is stacked on board a steamer mainly as deck cargo. The suggestion here is to float a big mass of timber, consisting of millions of feet, in the form of a raft towed by ocean-going tugs. The length of each raft would be some 800 ft.: a whole convoy of such could be brought over in the manner detailed above and would materially assist our war effort!

Bribing German Army according to rank. Suggest we might offer them homes in our colonies (as naturally they would be unable to return to Germany); cost of bribery, though great, would be less than the cost of war.

Sending lions into enemy territory.

Mechanically-operated bayonet.

Grapnels from aircraft to collect parachute-floated landmines before they reach the ground.

Anti-parachutists' net, into pockets of which the parachutists should drop, with the resultant ringing of a bell.

Collapsible stages erected round our shores to cause confusion and dire distress to invaders.

Wild animals, snakes, scorpions, etc., to be dropped by our airmen over enemy country.

Dazzle enemy by reflecting sunlight.

Jumping tanks.

Flying tanks—for example, a tank which is an aircraft, having two heads, no tail, no wings and a propeller working a universal joint at each end. (The inventor appears to have been serious, but included that the propeller would be mounted like "Mary's little lamb whose nose was double-jointed, and everywhere Mary went, the lamb's nose swiftly pointed.")

A flying tank—a sort of cross between a tortoise and a tiger.

A gaseous but harmless compound which would solidify in air as a gelatinous substance, to enmesh and render individuals incapable of physical action.

Large umbrella painted inside with constellations for guide at night.

Headgear with folds depending which could be let down completely about the wearer, the material being gas-resisting.

The number of inventions that reach Whitehall are very considerable, in spite of the fact that, as warfare is so technical now, it is pounds to pennies that only an expert metallurgist or professional inventor could devise anything suitable. From 1935 to 1939, 11,968 suggestions were received by the War Office alone. In January 1940, 1,467 "inventions" were submitted. The peak height for invention submissions was June 1940 (not surprisingly). This was the all-time high-level of 6,910. The latest figures—up to July 1, 1942—show that 50,354 "inventions" have been submitted, and that these continue to flow in at the rate of 280 a week.

But what is an inventor? Technically, the inventor, to be rewarded, is the man who is the cause of an invention being adopted. If, for example, I thought out a device five years ago and kept it in my cupboard, and someone else thought out exactly the same device and turned it in to the Ministry of Supply to-morrow, he would be rewarded and not myself.

Then what is an invention? This is much harder to answer. Take the Sten gun. The Sten is not German nor based on the Schmeisser gun, whatever may be said. It is based on the Bergman gun (1918). The Bergman gun is based on the Berthier gun (1904). The Berthier gun was developed from the Maxim (1886). The Maxim derives from the French father of all automatics, born in 1854. In other words, it is very difficult to find the difference between an invention and the adaptation to modern requirements of a previous idea.

Awards to inventors are made through a Ministry of Supply Committee, of which Dr. Gough is Chairman. The Committee includes representatives of the Ministry of Supply, and the Treasury, Admiralty and War Office, and has power to award sums up to £1,000 without reference. Beyond that, the matter has to go to the Treasury.

In spite of what appears above, some people may still dispute the guarantee that their inventions may ultimately pay a dividend. The answer is that the patentee always has the right to apply to the Law Courts, and so far no case has arisen within recent years.

To conclude: it is sometimes found that an outside Department to whom an invention is submitted does not approve the invention at first sight. If it is ultimately approved, the inventor may be asked to collaborate in the development and production of the apparatus based on his idea. But sometimes, when a proposal is rejected, it is impossible to give technical reasons for its rejection without disclosing secret information. For this very reason the reply may seem unduly terse, but, after all, there *is* a war on. And personally, after my investigations at the Ministry of Supply, I am completely satisfied that the Directorate of Research Development is just in its dealings with outside inventors, and surprisingly patient about the most Heath Robinson-like inventions.

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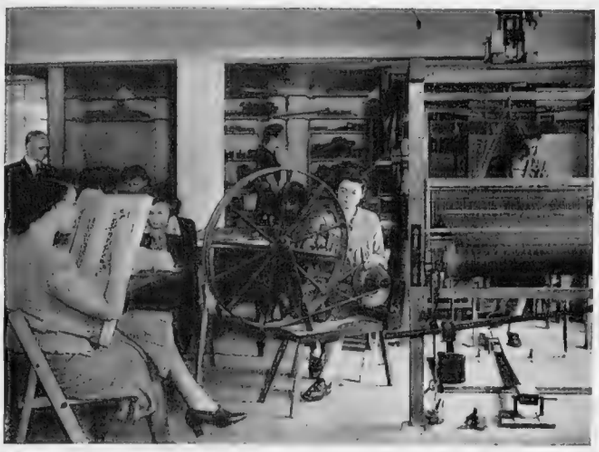
ART AND INDUSTRY IN LAKELAND

The Work of the Royal College of Art in its Wartime Home in the Lake District



IN A CONVERTED BARN USED AS A WEAVING SHED: Students at work on weaving (right), winding pirns (centre), preparing screen for painting and preparing paint paper for weaving (left)

MOST OF THE STUDENTS IN THE LAKELAND HOME OF THE ROYAL COLLEGE OF ART ARE NOW GIRLS: Here one of the women pottery workers is unpacking the kiln

STUDENTS RECEIVING INSTRUCTION IN THE SCHOOL OF SCULPTURE

The Royal College of Art is the oldest in the world: it was evacuated two years ago from Kensington to a small town in the Lake District, with its Principal (Mr. P. H. Jowett) and a number of distinguished Professors and instructors in painting, sculpture, engraving, weaving, pottery, etc. The College is now housed in two large hotels, with a converted barn as a weaving shed: of necessity, most of the students at present are girls, the majority of the male students being in the Forces or engaged on other war work. Many of the materials in which the students are now working are local products—Lakeland green slate in the Sculpture School (chiefly used in the making of plaques), limestone and clay from just outside the district in the sculpture and pottery departments, being amongst them. The course at the College is usually of three years' duration, during which visits to industrial establishments are organised for the students

A STRIKING PICTURE ON THE SLOPES OF LOUGHRIGG, near Ambleside, in the very heart of the Lake District, looking towards Scandale Fell. In the foreground is a group of students of the Royal College of Art sketching the wonderful scene

The World of Books—By Vernon Fane

THE LIFE OF A GOOD MAN

A Detailed Biography of Dick Sheppard; Stephen Leacock's Humorous Uncle; An Old Wives' Tale by Francis Brett Young; A Stanyon Family Sequel; A Novel by Cecil Roberts after Four Years

SHAKESPEARE, when he delivered himself of the tag—

"The evil that men do lives after them,
Their good is oft interred with their bones,"

did not envisage the scope and resources of the modern newspaper, of up-to-date publishers, nor the omnivorous appetites of the readers of large-circulation magazines. And, even in this vulgar age, the ratio of good and evil due for interment can be questioned, for nowadays it is the fashion to respect that other tag, *de mortuis nil nisi bonum.*

A man who has been well in the public eye can scarcely escape the close following to his grave of a comprehensive biography, and, in some cases, a flock of personal memoirs. This may be all to the good, since those who are held in high esteem in their own generation do not always receive the same evaluation from the hungry generations to come. Not that anyone would wish to tread down the memory of that great and good man, Dick Sheppard. In the uneasy years between two wars, few men wielded more influence, and whatever views one may now take of his pacifist activities, his integrity and his essential goodness have never been in question.

H. R. L. SHEPPARD: LIFE AND LETTERS (John Murray. 15s.) is a memoir which comes properly from the loving pen of his great friend and companion R. Ellis Roberts. Dick Sheppard was a type of Church of England clergyman, almost an anachronism in his day, and in some sense a hang-over from the turn of the century. The "fashionable" West End parson enjoyed considerable social, and sometimes political, power. Dick Sheppard had many advantages in developing this position, both within the Church and outside it. He had the most powerful of mentors in Lord Lang, and he was *persona grata* with nearly everyone who mattered, from Court circles onwards. The number of his devoted friends was legion, and it is significant that a large number of them were to be found in literary and theatrical circles. Like most men of strong character and strong opinions, he frequently was the centre of acute controversy, and in his case, these centred round both spiritual and material affairs.

That he was a lovable man and a leader of men is the inescapable verdict of these pages, from whatever point of view they are taken. Mr. Ellis Roberts has done his job with all the mellow deftness of a man of letters, and if he errs at all this side idolatry, more than one reader may account that to him for righteousness.

MRS. RANDOLPH CHURCHILL PLAYS WITH THE CHILDREN IN HERTFORDSHIRE: Ickleford House was the first home occupied by Major and Mrs. Randolph Churchill after their marriage: it has now been converted into a day nursery for children, as one of the eight adopted by the Canadian Red Cross. Mrs. Randolph Churchill formally opened it a few days ago, when this picture was taken: it shows her playing with some of the children in the sandpit of the garden at Ickleford

How right that Mr. Stephen Leacock should have had a more exotic and more splendid uncle than anybody else, and how doubly right that he should have written an excellent essay on him, the essay which gives the title to his new book of sketches. MY REMARKABLE UNCLE (Bodley Head. 7s. 6d.) shows Leacock in his old irresponsible and inimitable form, the Leacock of *Moonbeams from a Larger Lunacy*, and of all those stories that built up from a quiet chuckle to a fine uproarious laugh, and left the reader not only amused, but in better spirits altogether.

For there is no bitterness and very little of malice about this humour, and if the writer takes a sly dig or two at old-established customs (like the giving of Christmas presents) and old-established countries (like England), there is no rancour about it, and often, let it be said, a good deal of truth.

Here he is on E.P., the fabulous uncle. "In all his interviews E.P. could fashion his talk to his audience. On one of his appearances I introduced him to a group of college friends, young men near to degrees, to whom degrees mean everything. In casual conversation E.P. turned to me and said, 'Oh, by the way, you 'll be glad to know that I 've just received my honorary degree from the Vatican—at last!'. The 'at last' was a knock-out—a degree from the Pope, and overdue at that!"

Mr. Francis Brett Young has called his new novel an old wives' tale for his own sufficient reasons, though one would be wrong in supposing that it had any of the flavour of Arnold Bennett about it, and in his dedication (which I read, as I read all intimate dedications, with the feeling that I have steamed open a letter) has promised a portrait of a villain.

A MAN ABOUT THE HOUSE (Heinemann. 9s. 6d.) not only provides the old wives and the villain, but the best novel Mr. Brett Young has written since *The House Under the Water*. The setting is half in a bleak Midlands town, half—and this is the more entertaining half—in a town south of Naples which seems to combine many of the beauties and all the fantasies of Capri.

His old wives are two middle-aged sisters, an oddly-assorted pair, raised in the strictest traditions of nineteenth-century Anglo-Indian society, and catapulted with little preparation into the bizarre atmosphere of a Monfalcone. The ladies react immediately and, for such ladies, violently to their new surroundings, and the villain smiles and smiles and is the most thorough-paced, murderous blackguard that ever poisoned a lady's gruel.

I enjoyed this immensely, partly, it must be confessed, for its contrast with this writer's calm and reticent treatment of his characters in the past few years. Doctors are frequently heard to recommend a good change, and here is one that I can whole-heartedly recommend to you.

Miss Jacobine Menzies-Wilson first introduced us to the Stanyon family in the pre-war-Munich period between 1938 and 1939. THE EYE OF A NEEDLE (Collins. 8s. 6d.) continues their story from the fateful month of May 1940 until the end of that year.

Although this is in a sense a sequel, no prospective reader may need to be put off by that, for the individuals in the family and their actions in this book are well able to stand by themselves. "There is nothing unusual about us," Joanna Stanyon says. "We are an ordinary family, very much like many other families which can be found here and there throughout our country. My only excuse for writing about us is that we are not living in ordinary times."

They are, in fact, a typically English upper-middle-class family, living in a country village not too far from London. The husband is on some reasonably important industrial work; Meriel is a social worker at a London Rest Centre; Sarah is a Cadet Officer in the A.T.S.; and Timothy is at school. There is the usual evacuee, women's institute, gardening, Civil Defence, and the rest of the wartime activities with which this type of book has made us familiar.

It is also the type of book which is apt to give the Americans a lopsided view of this country at war, but since the author is not concerned with propaganda on our industrial effort, I suppose she cannot fairly be criticised for that. There is a good deal of acute observation of various aspects of English social life and, on the whole, it is a pleasant chronicle of what indeed it sets out to be—i.e., a record of an ordinary family.

ONE SMALL CANDLE (Hodder and Stoughton. 8s. 6d.) is presented as Mr. Cecil Roberts' "first novel in four years." Briefly, it is the story of one Charles Woodfall, who was snatched from the threshold of a career as a country doctor into the more interesting, and certainly more lucrative, one of that of a successful playwright and Hollywood scenario writer, by the happy circumstance of getting his first play accepted and put on in the West End.

Hollywood and New York intervening, much of the action is, therefore, set in the United States, in which country the author has had unrivalled opportunity to observe the contemporary scene since the war. The rest of it hovers between Venice and Vienna, and it does not need me to tell this author's fans that he is perfectly at home in both capitals. Probably no more typically peacetime novel has been, or may be, produced in wartime.

The NEW LONDON PLAYS

Reviewed by Philip Page

Salt of the Earth (Vaudeville).—This clever and moving play, by Michael Egan, is not for your escapist playgoer. With Occupied France as the scene war could hardly be in the background. Whether this is an exact picture of what is happening at the moment in the average farmhouse in Normandy I do not pretend to know. Nor, I imagine, does the author, for evidence is scanty. But it seems to strike a most realistic note, and the material, whether authentic or no (more than probably the former), is put together with such skill that the result is not only an added sympathy with the vast majority of the French people, who hate both Nazis and their own Quislings and Collaborationists, but an impressive and valuable piece of drama. The central figures are a French farmer and his family, passionately patriotic, and regarding England as an ally and the main hope of salvation. A young R.A.F. officer is hiding in their house, whither come a nasty Frenchman and his wife, rich and quislingist, police, a newspaper correspondent and, finally, a bunch of German soldiers, foul and bestial with one exception—and that exception is, of course, beaten up by his fellows (which was not surprising, considering he cursed Hitler in front of them). I found at least four-fifths of *Salt of the Earth* interesting, and even exciting, the salt of the long and accomplished cast being Miss Leueen MacGrath, as the daughter of the house; Miss Louise Hampton as her mother; and Mr. George Howe and Miss Marjorie Mars as the unpleasant French couple.

Rose Marie (Stoll).—The revival of *Rose Marie* is the nearest approach to opera that has been seen at this fine theatre since it ceased, many years ago, to be an opera-house. There is a pleasant air of lavishness about the show, the obvious success of which is largely due to the skill of Mr. Felix Edwardes, the producer; for as a play this never did amount to much, and it struck me as amounting to even less than it did at Drury Lane some sixteen years ago. The music is tuneful enough, but is spoiled by being "plugged" to a tedious degree. How many times they repeated the number "Totem Tom-Tom" before, half-hysterical with exasperation, I walked out into Kingsway for a breath of air, I did not count. But I do know that, when I returned to my stall they were still singing it.

There is a good cast. Miss Marjorie Browne adequately replaces Miss Edith Day (which cannot have been an easy job); she sings and acts well, and has a pleasant personality. Miss Phyllis Monkman, looking as attractive as ever, is brimful of cheery comedy, and that fine baritone, Mr. Raymond Newell, is a mighty asset.

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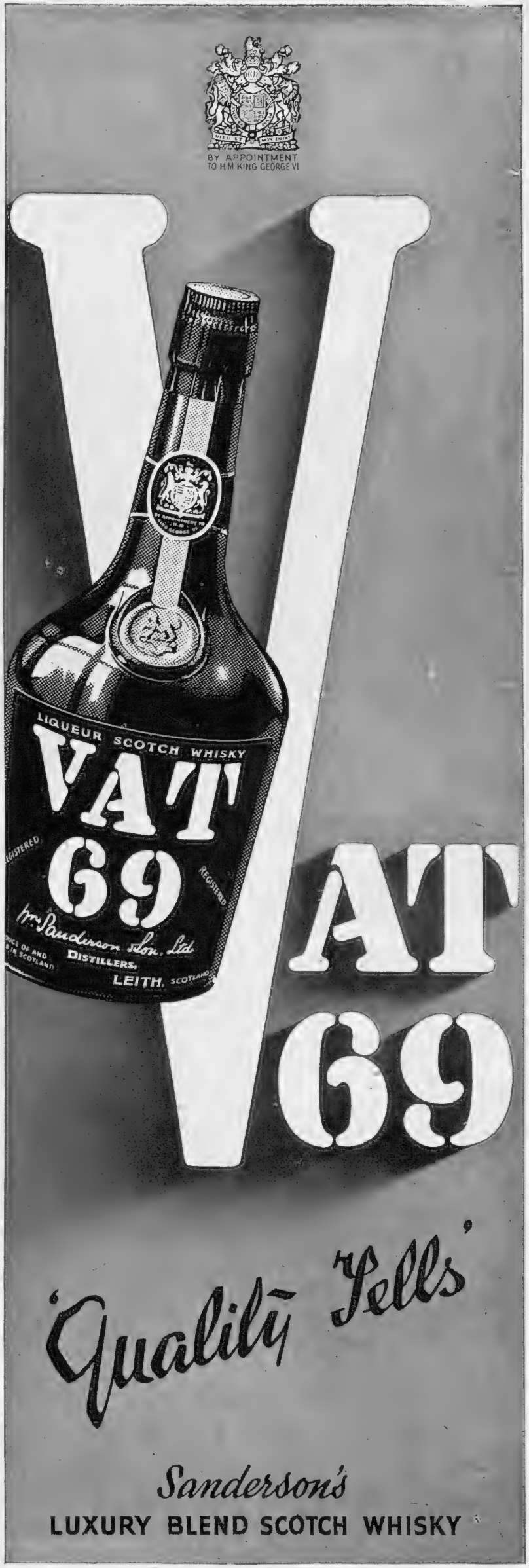

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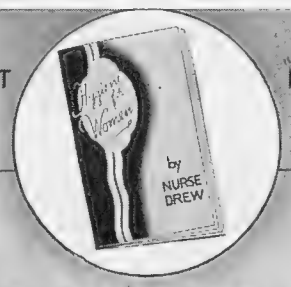

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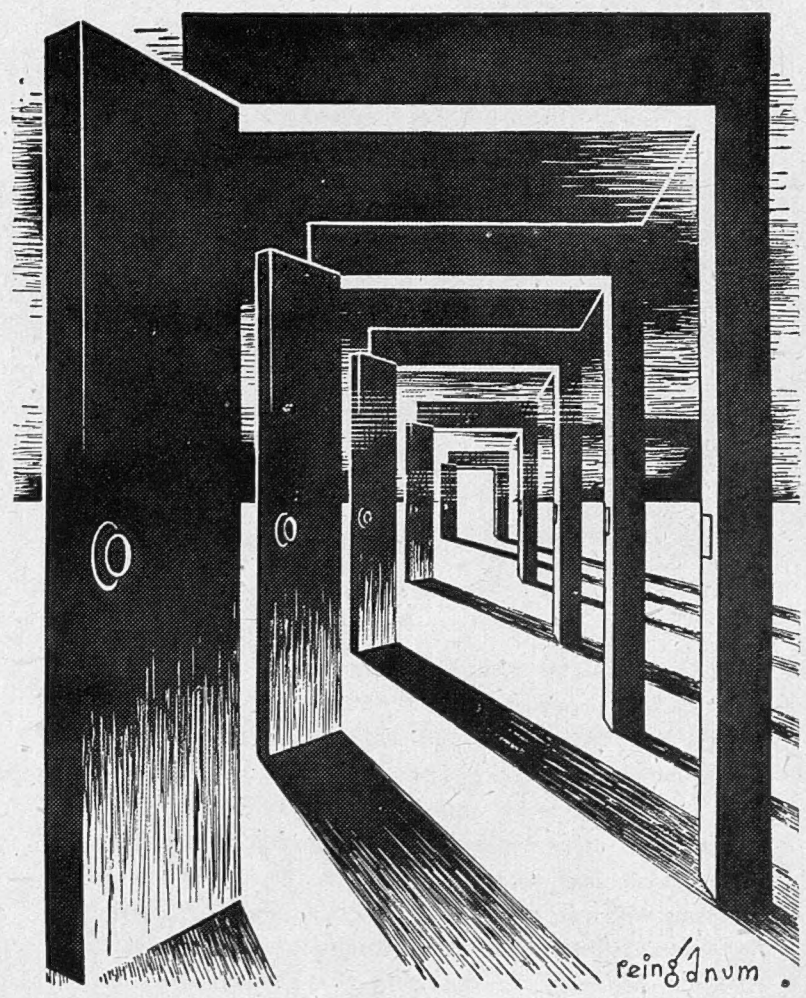

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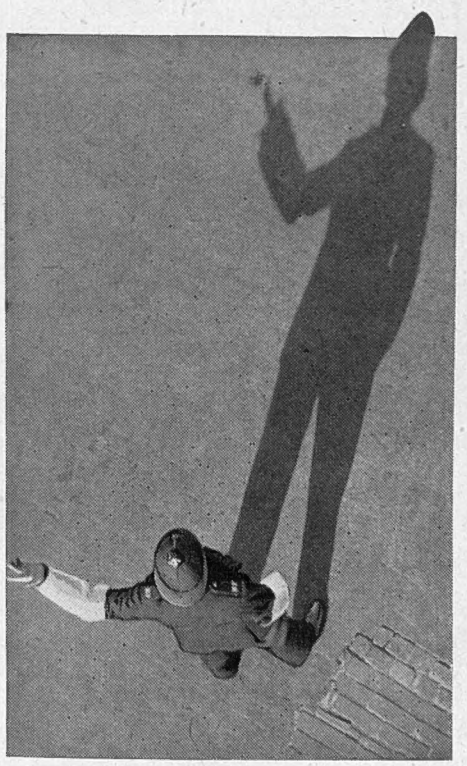

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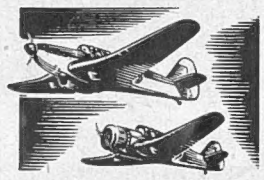
FOLLOWING the record-breaking achievements in 1934-5 of Miles single-engined Aircraft, and while plans for Service trainers were taking shape, the designers set out to realise their next ambition of developing transport aircraft, of which the 1935 Merlin single-engine five-seater had been the first.

Their aim was a medium aeroplane capable of carrying a ton of disposable load, and the result—the Peregrine—first Miles aeroplane with two motors and retractable undercarriage, but in the proved Miles tradition of low-wing monoplane design. The Peregrine carries eight, including the pilot, and with two Gipsy VI engines, has a range of 550 miles, cruising at 160 m.p.h., with a top speed of 180 m.p.h. It was the growing reputation of Miles Aircraft for reliability and high performance that led the designers into the commercial field. They were keenly appreciative of the operator's problems and of the increasing air-mindedness of the World.

Other designs for transport planes of even more progressive character came from the drawing board, only to be shelved as the war clouds gathered and the demand increased for Miles Service Aircraft, among which is the now-famous Miles Master — fast advanced Monoplane Trainer for the Monoplane Pilots of the R.A.F.



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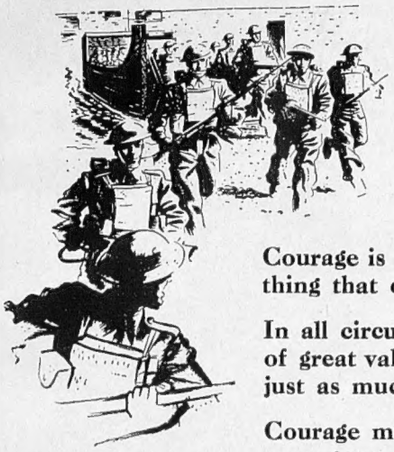

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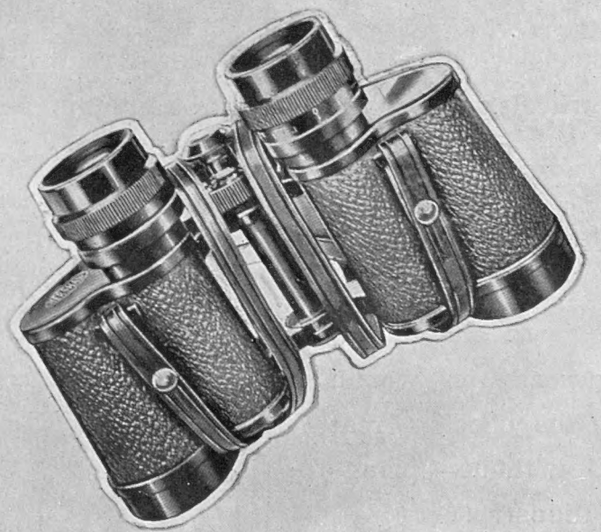

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